



IN THE UNITED STATES PATENT OFFICE

In re patent application of:) Before the Examiner:
Mark A. Stansbury) Anita M. King
Application No. 10/669,829) Group Art Unit 3632
Filed September 24, 2003)
FURNACE MOUNT AND)
METHOD OF INSTALLATION)

I hereby certify that this correspondence is being deposited electronically with the United States Postal Service Express Mail in an envelope addressed to the Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450 on:

June 22, 2009

Date of Deposit

J. Stephen Wills

Name of Registered Representative

Signature

APPEAL BRIEF.

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to the Notice of Appeal filed with the United States Patent Office on July 10, 2008 and to the Notification of Non-Compliant Appeal Brief on May 21, 2009 in connection with the above-indicated application, a corrected Appeal Brief according to 37 CFR § 41.37 is provided. Statements citing references not entered by the Examiner on page 13 were removed. The Commissioner is authorized to grant any extensions of time, and charge any deficiency or credit any overpayment to Deposit Account No. 12-2424, but not to include issue fees.

I. REAL PARTY IN INTEREST

Per 37 CFR §41.37(c)(1)(i), NSA LLC is the successor in interest of NSA Corporation and is the real party in interest. NSA Corporation obtained ownership of the present application by written assignment recorded at reel/frame number 012262/0309. NSA has licensed an interest to Bramec Corporation of South Dakota.

II. RELATED APPEALS AND INTERFERENCES

Per 37 CFR §41.37(c)(1)(ii), The Appellant, Appellant's legal representative, and the assignee are unaware of any related appeals or interferences which will affect, be directly affected by, or have a bearing on the Appeal Board's decision in the present appeal.

III. STATUS OF CLAIMS

Per 37 CFR §41.37(c)(1)(iii), claims 5-12, 15, 17-22, 26, 28-31, 34, 35, 40, 43, 45-53 and 56-58 are pending, all of which stand rejected. All rejections are appealed hereby on the grounds further explained hereinafter. Claims 1-4, 13, 14, 16, 23-25, 27, 32, 33, 36-39, 41, 42, 44, 54 and 55 have been canceled. The claims are presented in the Claims Appendix in accordance with 37 CFR §41.37(c)(1)(viii).

IV. STATUS OF AMENDMENTS

Per 37 CFR §41.37(c)(1)(iv), the present Appeal Brief is in response to a Final Office Action indicated as having a mail date of July 8, 2008. The claims that are on

appeal are those set forth in Appellant's Amendment mailed December 10, 2007, which was received by the USPTO on December 14, 2007.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Per 37 CFR §41.37(c)(1)(v), the following summarization provides a concise explanation of the subject matter defined in each of the independent claims involved in the appeal. All citations to the present application refer to Publication Number US 2005/0035266 published on Feb. 17, 2005.

Claim 15 states, "A mount for supporting a furnace above the floor, comprising: a substantially rigid main body member having a first surface adapted to engage the floor and a second surface spaced from said first surface and adapted to support the furnace above the floor; a vibration dampening component positioned on and connected with said second surface, said vibration dampening component having an outer adhesive surface adapted to engage and couple said main body member with the furnace; and wherein said main body member has a locating portion extending from said second surface to abut an outer surface of the furnace and position said second surface relative to the furnace, said locating portion includes two upstanding members that are oriented perpendicular to one another."

An exemplary embodiment of claim 15 is described in Figures 1-10 and related text. A member 13 includes a floor elevation body member portion 15 and an upstanding attachment member portion 16. See paragraph 32, lines 7-9. The member 13 is formed from a metallic material, composite materials, polymeric materials,

synthetic organic materials, and/or plastic. See paragraph 23, lines 16-21. A first surface 116 engages the floor and a second surface 117 is spaced from the first surface 116 and supports the furnace above the floor. See paragraph 27, lines 2-12. A vibration dampening pad 19 is positioned between the furnace and the second surface 117. See paragraph 24, lines 1-3. In one form, a vibration dampening material 126 is located on and supported by the second surface 117, and an adherent layer 125 is on a furnace side surface of the vibration dampening material 126. See paragraph 30, lines 1-6, and lines 21-23. A locating portion 120 including two upstanding members 121 oriented perpendicular to one another is described, where the locating portion 120 abuts an outer surface 10a of the furnace. See paragraph 28, lines 11-15.

Claim 21 states, "A combination, comprising: a furnace having outer walls that define four corners; and a plurality of furnace mounts adapted to hold the furnace above a floor, each of said plurality of mounts located at and abutting the outer walls defining each of said comers, wherein each of said plurality of mounts comprises: a substantially rigid main body member having a first surface adapted to engage the floor and a second surface spaced from said first surface and supporting the furnace above the floor; a vibration dampening component positioned on and connected with said second surface, said vibration dampening component having an outer adhesive surface coupling said main body member with the furnace; and wherein said main body member has an integrally formed locating portion extending from said second surface to abut an outer surface of the furnace and position said second surface relative to the furnace."

An exemplary embodiment of claim 21 is described in Figures 1-10 and related text. A furnace 10 having four corners is described with members 14 at each of the four corners. See paragraph 22, lines 6-10. A member 13 includes a floor elevation body member portion 15 and an upstanding attachment member portion 16. See paragraph 32, lines 7-9. The member 13 is formed from a metallic material, composite materials, polymeric materials, synthetic organic materials, and/or plastic. See paragraph 23, lines 16-21. A first surface 116 engages the floor and a second surface 117 is spaced from the first surface 116 and supports the furnace above the floor. See paragraph 27, lines 2-12. A vibration dampening pad 19 is positioned between the furnace and the second surface 117. See paragraph 24, lines 1-3. In one form, a vibration dampening material 126 is located on and supported by the second surface 117, and an adherent layer 125 is on a furnace side surface of the vibration dampening material 126. See paragraph 30, lines 1-6, and lines 21-23. A locating portion 120 including two upstanding members 121 oriented perpendicular to one another is described, where the locating portion 120 abuts an outer surface 10a of the furnace. See paragraph 28, lines 11-15.

Dependent claim 29 states, "The combination of claim 21, wherein each of said plurality of furnace mounts are coupled to the furnace free of any mechanical fasteners." An exemplary embodiment of claim 29 is described at paragraph 29, "[t]he adhesive material securely couples the furnace mounting block 111 with the furnace 10. In one form of the present invention the adhesive material is a double backed tape, however other material such as, but not limited to, glue are contemplated herein." See paragraph 29, lines 6-10.

Claim 40 states, "A mount for supporting a furnace above the floor, comprising: a molded integrally formed rigid main body member having a first surface adapted to engage the floor and a second surface spaced from said first surface and adapted to support the furnace above the floor; an adherent component connected with said main body member and located proximate said second surface, said adherent component including an adhesive surface adapted to engage and couple said main body member with the furnace; and means for locating the furnace on said second surface, wherein said means for locating the furnace is adapted to abut the furnace."

An exemplary embodiment of claim 40 is described in Figures 1-10 and related text. A molded integrally formed rigid main body member 13 (see paragraph 23, lines 7-14) includes a first surface adapted to engage the floor and a second surface spaced from said first surface and adapted to support the furnace above the floor (see paragraph 27, lines 2-12). An adherent component connected with the main body member and located proximate to the second surface includes an adhesive surface adapted to engage and couple the main body member with the furnace. See paragraph 30 lines 1-6 and lines 21-23. A means for locating the furnace on the second surface, and adapted to abut the furnace, is described in various places including paragraph 23 lines 24-32, paragraph 28 lines 1-17, paragraph 31 lines 3-8, paragraph 32 lines 10-13, and paragraph 32 lines 16-19.

Claim 46 states, "A mount for supporting a furnace above the floor, comprising: a substantially rigid main body member having a first surface adapted to engage the floor and a second surface spaced from said first surface and adapted to support the

furnace above the floor; a vibration dampening component positioned on and connected with said second surface, said vibration dampening component having an outer adhesive surface adapted to engage and couple said main body member with the furnace; and wherein said main body member has a locating portion extending from said second surface to abut an outer surface of the furnace and position said second surface relative to the furnace.”

An exemplary embodiment of claim 46 is described in Figures 1-10 and related text. A substantially rigid main body member 13 (see paragraph 23, lines 7-14) includes a first surface adapted to engage the floor and a second surface spaced from said first surface and adapted to support the furnace above the floor (see paragraph 27, lines 2-12). A vibration dampening component 19 is positioned on and connected with the second surface. See paragraph 24, lines 1-3. In one form, a vibration dampening material 126 is located on and supported by the second surface 117, and an outer adhesive surface 125 engages and couples the main body to the furnace. See paragraph 30, lines 1-6, and lines 21-23. A locating portion 120 extends from the second surface to abut an outer surface of the furnace and to position the second surface relative to the furnace. See paragraph 32, lines 10-13.

Claim 51 states, “A combination, comprising: a furnace having outer walls that define four comers; and a plurality of furnace mounts adapted to hold the furnace above a floor, each of said plurality of mounts located at and abutting the outer walls defining each of said corners, wherein each of said plurality of mounts comprises: a substantially rigid molded main body member having a first surface adapted to engage the floor and

a second surface spaced from said first surface and supporting the furnace above the floor, said main body member is a single piece integrally formed structure including a locating portion adapted to abut at least one of the outer walls of the furnace; and a vibration dampening component positioned on and connected with said second surface, said vibration dampening component having an outer adhesive surface coupling said main body member with the furnace.”

An exemplary embodiment of claim 51 is described in Figures 1-10 and related text. A furnace 10 having four corners is described with members 14 at each of the four corners holding the furnace above the floor and abutting the outer walls. See paragraph 22, lines 6-10, and paragraph 32, lines 7-9. A molded, integrally formed, substantially rigid main body member 13 (see paragraph 23, lines 7-14) includes a first surface adapted to engage the floor and a second surface spaced from said first surface and adapted to support the furnace above the floor and abut at least one outer wall of the furnace (see paragraph 27, lines 2-12). A vibration dampening component 19 is positioned on and connected with the second surface. See paragraph 24, lines 1-3. In one form, a vibration dampening material 126 is located on and supported by the second surface 117, and an outer adhesive surface 125 couples the main body to the furnace. See paragraph 30, lines 1-6, and lines 21-23.

Claim 56 states, “A mount for supporting a furnace above the floor, comprising: an integrally formed main body member having a first surface adapted to engage the floor and a second surface spaced from said first surface and adapted to support the furnace above the floor, said main body member including a pair of integrally formed

upstanding wall members defining a locator portion to abut an outer surface of the furnace and position the furnace relative to said main body member; and an adherent component connected with said main body member and located proximate said second surface, said adherent component including an adhesive surface adapted to engage and couple said main body member with the furnace.”

An exemplary embodiment of claim 56 is described in Figures 1-10 and related text. An integrally formed rigid main body member 13 (see paragraph 23, lines 7-14) includes a first surface adapted to engage the floor and a second surface spaced from said first surface and adapted to support the furnace above the floor (see paragraph 27, lines 2-12). A pair of integrally formed upstanding wall members 121 define a locating portion 120 that abuts an outer surface of the furnace and positions the second surface relative to the furnace. See paragraph 28, lines 12-15. In one form, an adherent component includes a vibration dampening material 126 located on and supported by the second surface 117, and an outer adhesive surface 125 engages and couples the main body to the furnace. See paragraph 30, lines 1-6, and lines 21-23.

Dependent claim 5 states, “The mount of claim 56, which further includes a vibration dampening material located on said second surface and adapted to receive the furnace thereon, and wherein said vibration dampening material is defined by an elastomeric material.” An exemplary embodiment of claim 5 is described at paragraph 30, lines 1-3 and lines 15-17.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Pursuant to 37 CFR §41.37(c)(1)(vi), review of the following issues are presented in this appeal:

A. The rejection of claims 29, 45, 48, 50 and 52 under 35 U.S.C. §112 as failing to comply with the enablement requirement.

B. The rejection of claims 5, 8-11, 26, 30, 31, 34, 35, 40, 43 and 56-58 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 1,887,283 to Brabson (Brabson) and U.S. Patent No. 3,326,508 to Born (Born).

C. The rejection of claims 6 and 12 under 35 U.S.C. §103(a) as being unpatentable over Brabson, Born, and U.S. Patent No. 1,880,153 to Rosenzweig (Rosenzweig).

D. The rejection of claim 7 under 35 U.S.C. §103(a) as being unpatentable over Brabson, Born, and U.S. Patent No. 3,583,215 to Franz (Franz).

E. The rejection of claims 15, 17-20, 28, 46, 47 and 49 under 35 USC § 103(a) over Brabson, U.S. Patent No. 4,721,275 to Benton, et al., (Benton), and Born.

F. The rejection of claims 21, 22, 51 and 53 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 1,647,828 to Griswold (Griswold), Brabson, Benton, and Born.

VII. ARGUMENTS

The following remarks address the different grounds of rejection in accordance with 37 CFR § 41.37(c)(1)(vii).

For purposes of clarification, Appellants assert that if claim 56 is allowable, all remaining claims in the present application are allowable for analogous reasons or for depending upon an allowable claim. Appellants assert that if claim 5 is allowable and claim 56 is not allowable, claims 5-12, 15, 17-20, 21, 22, 27, 29, 34, 35, 46, 47-50, 51-53, and 58 are also allowable for analogous reasons or for depending upon an allowable claim.

Some of the rejections herein are based on 35 U.S.C. § 103(a). The seminal case directed to application of 35 U.S.C. § 103 is *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966). From this case, four familiar factual inquiries have resulted. The first three are directed to the evaluation of prior art relative to the claims at issue, and the last is directed to evaluating evidence of secondary considerations. See, MPEP §2141.

The examiner bears the burden of establishing a prima facie case of obviousness. See, *In re Warner*, 379 F.2d 1011, 1016, 154 USPQ 173 (CCPA 1967), *cert. denied*, 389 U.S. 1057 (1968). To meet this burden, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a

reasonable expectation of success. Third, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. See, MPEP § 2142, citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). *KSR v. Teleflex*, 550 U.S. ____ (2007), makes clear that “the [Graham] factors continue to define the inquiry that controls.” *KSR* at 2. For the following reasons, these criteria have not been met and a prima facie case of obviousness has not been established.

A. The rejection of claims 29, 45, 48, 50 and 52 under 35 U.S.C. §112 as failing to comply with the enablement requirement.

The Final Office Action (Final) states that “Claims 29, 45, 48, 50, and 52... contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The above mentioned claims cite the limitation the ‘plurality of furnace mounts are coupled to the furnace free of any mechanical fasteners’; this limitation negates the claim language of claim 21, 40, 46, and 50 [sic] from which the above claims depend. The adhesive surface or adherent component cited in claims 21, 40, and 46 is a mechanical fastener and thus, claims 29, 45, and 48 have not been further treated on their merits.” Final, at page 2.

Appellants respectfully traverse the rejection. The Specification states that “[i]n one form of the present invention the adhesive material is a double backed tape,

however other materials such as, but not limited to, glue are contemplated herein.” See paragraph 29, lines 7-10. In another section, the Specification states “[t]he furnace mounting block with the adhesive exposed is positioned proximate the bottom surface 20 of the furnace 10.” See paragraph 32, lines 8-10, emphasis added. The Specification presents clear examples of the adhesive surface or adherent component as an adhesive or a glue. One of skill in the art views a glue or adhesive as a chemical fastener, and views a mechanical fastener as requiring a mechanical component. By way of example, the reference U.S. Patent 3,669,066 to Smith contrasts “adhesive binding” with a series of mechanical fastening means including “wire staples, ring and spiral binders, cotter clips and the like.” Smith at col. 1, lines 35-41. As another example, the reference U.S. Patent 3,794,181 to Canham contrasts “highly adhesive material” with “screws or other fasteners” as alternate methods to fix a holder to a wall. Canham at col. 2, lines 59-66. As a third example, the reference U.S. 5,557,824 to Bushey contrasts attachment by “screws, threaded stems, nails, or by press fitting” with an adhesive. Bushey at col. 1, lines 25-29, 39, and 54-55. Therefore, the specification clearly enables one of skill in the art to make and/or use the invention described in claims 29, 45, 48, 50, and 52.

Appellants assert that the Specification clearly describes embodiments that do not include a mechanical fastener. Further, for the reasons described above, one of skill in the art would not consider an adhesive to be a mechanical fastener, but rather a chemical fastener. Therefore, Appellants submit that the rejection of claims 29, 45, 48,

50, and 52 under 35 U.S.C. § 112 is improper, and requests that the rejection be withdrawn.

B. The rejection of claims 5, 8-11, 26, 30, 31, 34, 35, 40, 43 and 56-58 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 1,887,283 to Brabson (Brabson) and U.S. Patent No. 3,326,508 to Born (Born).

Claim 56 states, in relevant part, “an adherent component connected with said main body member and located proximate said second surface, said adherent component including an adhesive surface adapted to engage and couple said main body member with the furnace.” Claim 5 depends upon claim 56, and further includes, in relevant part, “a vibration dampening material located on said second surface and adapted to receive the furnace thereon, and wherein said vibration dampening material is defined by an elastomeric material.”

The Final acknowledges that Brabson does not include “an adherent component connected with the main body member and located proximate the second surface and a vibration dampening material located on the second surface.” See Final, page 3, lines 15-17. The Final states that Born teaches the missing aspects of Brabson, and asserts that one of skill in the art would have found it obvious to modify Brabson with elements of Born. The Appellants traverse the rejection of these claims under 35 U.S.C. § 103(a), and assert that claims 5, 8-11, 26, 30, 31, 34, 35, 40, 43, and 56-58 are patentable over Brabson and Born because that one of skill in the art would not

combine the teachings of Brabson and Born, and because secondary considerations strongly favor a finding of non-obviousness in the present application.

1) The combination of Brabson and Born is improper

Brabson discloses a “furniture support intended for stabilizing furniture in positions selected, so that it may not be casually moved about” (page 1, lines 68-72). The support is a substantially planiform rectangular plate 20 having upstanding integral flanges 21 (page 1, lines 76-78), on the lower side of which are points or spurs having blunt ends that are of sufficient length to sink partway through standard office linoleum whereby the support is fixed against lateral movement upon the floor (page 1, lines 96-100, Figs. 1-3). If the furniture supported by plate 20 is lifted and removed, the spurs remain in place so that furniture may be replaced exactly in their original position (page 2, lines 1-4). The disclosed and claimed embodiments allow the furniture to be easily removed from the supports, for example “a body plate adapted to be set under the leg of an article of furniture, said plate having furniture leg locating upstanding extensions defining a part of the boundary of the plate *shaped to receive a leg therebeside for free vertical movement...*” See Brabson claim, emphasis added.

Born discloses a universal slide caster 20 that enables easy sliding movement of bulky structures along a floor surface (col. 2, lines 27-31) while the furniture is engaged with the caster. A slide shoe 22 at the bottom of the caster 20 is made of a lubric plastic material to be smoothly slidable on all ordinary floor surfaces (col. 2, lines 58-61, Figs. 1-3), and a pressure sensitive adhesive 21A improves the grip and facilitates mounting of the caster.

Thus, Brabson provides a furniture support that prevents the sliding of the furniture while engaged with the supports. Brabson further provides that the furniture is freely engageable with the supports, and that features of the supports allow the furniture to be repositioned exactly after removal from the supports. By contrast, Born discloses a universal slide caster having a slidable shoe to allow sliding movement of bulky structures, and an adhesive to improve grip and facilitate mounting of the slidable caster on the bulky structure.

One of skill in the art would not look to a reference that teaches shoes to ease sliding of furniture to improve a reference that teaches a support that prevents the sliding of furniture. Further, the addition of either Brabson or Born to the other defeats the operation of the starting reference. For example, adding Brabson to Born prevents the furniture from sliding, defeating the intent of Born. Adding Born to Brabson defeats the free engagability of the furniture with the support, defeating the intent of Brabson and preventing the furniture from having any convenient method of being moved.

2) Products in accordance with the claims have experienced significant commercial success due to those products having the features claimed in the present application.

Evidence of commercial success must be considered in determining the issue of obviousness. See MPEP 716.01(a). In *ex parte* proceedings before the Patent and Trademark Office, an applicant must show that the claimed features were responsible for the commercial success of an article if the evidence of nonobviousness is to be accorded substantial weight. See *In re Huang*, 100 F.3d 135, 140, 40 USPQ2d 1685,

1690 (Fed. Cir. 1996) (Inventor's opinion as to the purchaser's reason for buying the product is insufficient to demonstrate a nexus between the sales and the claimed invention.).

In the present case, affidavits presented in February of 2004 present the case for the commercial success of products created under claimed aspects of the present invention. An exemplary affidavit is the one offered by Tim Jacobson on February 10, 2004. Numbered statement 3 makes it clear that Tim had not seen a furnace mounting block like the type described in the patent and that he used from NSA. Numbered statement 4 – “[w]ith the NSA Furnace Mounting Blocks the blocks and the furnace move together as one unit. Thereby, providing an installation time saving of about fifteen minutes for many installations,” provides a clear nexus between the claimed aspect in claim 56 (i.e. “adherent component”) and the reason for Tim’s satisfaction with the blocks. The affidavit of Walter Key offered on Feb. 11, 2004 indicates a rapid rise in sales from at least 50,000 units in to about 174,000 units within two years on a minimal advertising budget of less than \$12,000 during those two years combined (see Walter Key affidavit, numbered statements 4, 6, and 7). However, it is even more important that numbered statement 6 (emphasis added) of the Tim Jacobson affidavit clearly states that specific market share increases were attributable to the claimed aspects of the furnace mounting product, stating “our company *has adopted* the Furnace Mounting Blocks as our preferred means for mounting furnaces to the floor.”

The Federal Circuit clarified the standard required to prove the nexus between the commercial success and the novel features claimed in the application (From *In re Huang*, 100 F. 3d 135, 140, emphasis added):

Huang's affidavit contains a conclusory assertion that, in his opinion, the sales of the grips derive from the increased thickness of the polyurethane layer and the alignment of the pores. This merely represents the inventor's opinion as to the purchaser's reason for buying the product, and, alone, is insufficient. Instead, the applicant must submit some factual evidence that demonstrates the nexus between the sales and the claimed invention – *for example, an affidavit from the purchaser explaining that the product was purchased due to the claimed features.* ... In sum, Huang simply has not carried his burden to prove that a nexus existed between any commercial success and the novel features claimed in the application.

Contrasted with Huang, in the present case affidavits from multiple purchasers explaining that the product was purchased due to the claimed features are presented, and that specific market share increases occurred as a result. Therefore, Appellants have carried the burden to prove the nexus between the commercial success and the novel features claimed in the application. Each of the claims 5, 8-11, 26, 30, 31, 34, 35, 40, 43, and 57-58 either depends upon claim 56 or includes analogous novel elements that are addressed in the affidavits as discussed regarding claim 56 previously.

For the reasons described above, the references Brabson and Born would not be combined by one of skill in the art. Further, one of skill in the art with knowledge of both references would not combine them to create the present invention as evidenced by the commercial success of the articles of manufacture due to claimed features in the present application. Therefore, the rejection of claims 5, 8-11, 26, 30, 31, 34, 35, 40, 43, and 56-58 under 35 U.S.C. § 103(a) is improper and Appellants request that the rejections be overturned.

C. The rejection of claims 6 and 12 under 35 U.S.C. §103(a) as being unpatentable over Brabson, Born, and U.S. Patent No. 1,880,153 to Rosenzweig (Rosenzweig).

Appellants respectfully submit that claims 6 and 12 are patentable under 35 U.S.C. §103(a) over Brabson in view of Born and in further view of U.S. Patent No. 1,880,153 to Rosenzweig (hereinafter, Rosenzweig) for reasons analogous to those presented regarding claim 5 previously. Appellants respectfully request the Board overturn the rejection of claims 6 and 12 under 35 U.S.C. § 103(a).

D. The rejection of claim 7 under 35 U.S.C. §103(a) as being unpatentable over Brabson, Born, and U.S. Patent No. 3,583,215 to Franz (Franz).

Appellants respectfully submit that claim 7 is patentable under 35 U.S.C. §103(a) over Brabson in view of Born and in further view of U.S. Patent No. 3,583,215 to Franz (hereinafter, Franz) for reasons analogous to those presented regarding claim 5 previously. Appellants respectfully request the Board overturn the rejection of claim 7 under 35 U.S.C. § 103(a).

E. The rejection of claims 15, 17-20, 28, 46, 47 and 49 under 35 USC § 103(a) over Brabson, U.S. Patent No. 4,721,275 to Benton, et al., (Benton), and Born.

Appellants respectfully submit that claims 15, 17-20, 28, 46, 47 and 49 are

patentable under 35 USC § 103(a) over Brabson, U.S. Patent No. 4,721,275 to Benton, et al., (Benton), and Born for reasons analogous to those presented regarding claim 5 previously. Appellants respectfully request the Board overturn the rejection of claims 15, 17-20, 28, 46, 47, and 49 under 35 U.S.C. § 103(a).

F. The rejection of claims 21, 22, 51 and 53 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 1,647,828 to Griswold (Griswold), Brabson, Benton, and Born.

Appellant respectfully submits that claims 21, 22, 51 and 53 are patentable under 35 U.S.C. §103(a) over U.S. Patent No. 1,647,828 to Griswold in view of Brabson, Benton, and Born for reasons analogous to those presented regarding claim 5 previously. Appellants respectfully request the Board overturn the rejection of claims 21, 22, 51, and 53 under 35 U.S.C. § 103(a).

VIII. CONCLUSION

As set forth above, Appellants submit that all remaining claims in the present application are allowable. Therefore, reversal of the rejections by the Appeal Board is hereby requested.

Respectfully submitted,

J. Stephen Wills
Reg. No. 55,731
Krieg DeVault LLP
One Indiana Square, Suite 2800
Indianapolis, Indiana 46204-2079
Direct: (317) 238-6297
Fax: (317) 636-1507

CLAIMS APPENDIX

1. (Cancelled)
2. (Cancelled)
3. (Cancelled)
4. (Cancelled)
5. (Previously presented) The mount of claim 56, which further includes a vibration dampening material located on said second surface and adapted to receive the furnace thereon, and wherein said vibration dampening material is defined by an elastomeric material.
6. (Previously presented) The mount of claim 56, which further includes a vibration dampening material located on said second surface and adapted to receive the furnace thereon, and wherein said vibration dampening material is defined by a cork material.
7. (Previously presented) The mount of claim 56, which further includes a vibration dampening material located on said second surface and adapted to receive the furnace thereon, and wherein said vibration dampening material is defined by an elastomeric and cork configuration.
8. (Previously presented) The mount of claim 56, wherein said adherent component is attached to said vibration dampening material, and wherein said adhesive surface is spaced from said second surface.
9. (Original) The mount of claim 8, wherein said adhesive surface is substantially parallel with said second surface.

10. (Previously presented) The mount of claim 8, wherein said adherent component includes a vibration dampening portion located between said second surface and said adhesive surface.

11. (Original) The mount of claim 10, wherein said vibration dampening portion includes an elastomeric material.

12. (Original) The mount of claim 10, wherein said vibration dampening portion includes a cork material.

13. (Cancelled)

14. (Cancelled)

15. (Previously presented) A mount for supporting a furnace above the floor, comprising:

a substantially rigid main body member having a first surface adapted to engage the floor and a second surface spaced from said first surface and adapted to support the furnace above the floor;

a vibration dampening component positioned on and connected with said second surface, said vibration dampening component having an outer adhesive surface adapted to engage and couple said main body member with the furnace; and

wherein said main body member has a locating portion extending from said second surface to abut an outer surface of the furnace and position said second surface relative to the furnace, said locating portion includes two upstanding members that are oriented perpendicular to one another.

16. (Cancelled)

17. (Original) The mount of claim 15, wherein said vibration dampening component includes an elastomeric material.

18. (Original) The mount of claim 15, wherein said vibration dampening component includes a cork material.

19. (Original) The mount of claim 15, wherein said main body member supports the furnace about at least 2 inches above the floor.

20. (Original) The mount of claim 15, wherein said first and second surfaces are substantially parallel.

21. (Previously presented) A combination, comprising:

- a furnace having outer walls that define four corners; and
- a plurality of furnace mounts adapted to hold the furnace above a floor, each of said plurality of mounts located at and abutting the outer walls defining each of said comers, wherein each of said plurality of mounts comprises:
 - a substantially rigid main body member having a first surface adapted to engage the floor and a second surface spaced from said first surface and supporting the furnace above the floor;
 - a vibration dampening component positioned on and connected with said second surface, said vibration dampening component having an outer adhesive surface coupling said main body member with the furnace; and
 - wherein said main body member has an integrally formed locating portion extending from said second surface to abut an outer surface of the furnace and position said second surface relative to the furnace.

22. (Previously presented) The combination of claim 21, wherein said locating portion engages a corner of the furnace.

23. (Cancelled)

24. (Cancelled)

25. (Cancelled)

26. (Previously presented) The mount of claim 56, wherein said upstanding wall members extend substantially along two sides of said main body member.

27. (Cancelled)

28. (Previously presented) The mount of claim 15, wherein said two upstanding members are oriented perpendicular to one another, and wherein each of the two upstanding members has a bearing surface adapted to abut the furnace, and wherein said upstanding members are perpendicular to said second surface.

29. (Previously presented) The combination of claim 21, wherein each of said plurality of furnace mounts are coupled to the furnace free of any mechanical fasteners.

30. (Previously presented) The mount of claim 56, wherein said main body member has a first vertical length and at least one of said upstanding wall members has a second vertical length, wherein said first vertical length is substantially equal to said second vertical length.

31. (Previously presented) The mount of claim 56, wherein said main body member having a first vertical length and at least one of said upstanding wall members having a second vertical length, wherein said first vertical length is greater than said second vertical length.

32. (Cancelled)

33. (Cancelled)

34. (Previously presented) The mount of claim 56, wherein said adherent component including a vibration dampening material, and wherein said adhesive surface spaced from said second surface by said vibration dampening material.

35. (Previously presented) The mount of claim 34, wherein the mount is integrally molded of a polymeric material, and wherein the mount is a rigid body which can support the furnace.

36. (Cancelled)

37. (Cancelled)

38. (Cancelled)

39. (Cancelled)

40. (Previously presented) A mount for supporting a furnace above the floor, comprising:

a molded integrally formed rigid main body member having a first surface adapted to engage the floor and a second surface spaced from said first surface and adapted to support the furnace above the floor;

an adherent component connected with said main body member and located proximate said second surface, said adherent component including an adhesive surface adapted to engage and couple said main body member with the furnace; and

means for locating the furnace on said second surface, wherein said means for locating the furnace is adapted to abut the furnace.

41. (Cancelled)

42. (Cancelled)

43. (Previously presented) The mount of claim 40, wherein the mount is formed of a polymeric material.

44. (Cancelled)

45. (Previously presented) The mount of claim 40, wherein said main body is free of engagement with any mechanical fasteners.

46. (Previously presented) A mount for supporting a furnace above the floor, comprising:

a substantially rigid main body member having a first surface adapted to engage the floor and a second surface spaced from said first surface and adapted to support the furnace above the floor;

a vibration dampening component positioned on and connected with said second surface, said vibration dampening component having an outer adhesive surface adapted to engage and couple said main body member with the furnace; and

wherein said main body member has a locating portion extending from said second surface to abut an outer surface of the furnace and position said second surface relative to the furnace.

47. (Previously presented) The mount of claim 46, wherein said main body is a molded structure.

48. (Previously presented) The mount of claim 46, wherein the mount is adapted to be coupled to the furnace free of any mechanical.

49. (Previously presented) The mount of claim 46, wherein said first and second surfaces are parallel.

50. (Previously presented) The mount of claim 46, wherein said main body is molded of a polymeric material;

wherein the mount is adapted to be coupled to the furnace free of any mechanical fastener connecting with said main body member; and wherein said first and second surfaces are parallel.

51. (Previously presented) A combination, comprising:
a furnace having outer walls that define four comers; and
a plurality of furnace mounts adapted to hold the furnace above a floor, each of said plurality of mounts located at and abutting the outer walls defining each of said corners, wherein each of said plurality of mounts comprises:

a substantially rigid molded main body member having a first surface adapted to engage the floor and a second surface spaced from said first surface and supporting the furnace above the floor, said main body member is a single piece integrally formed structure including a locating portion adapted to abut at least one of the outer walls of the furnace; and

a vibration dampening component positioned on and connected with said second surface, said vibration dampening component having an outer adhesive surface coupling said main body member with the furnace.

52. (Previously presented) The combination of claim 51, wherein each of said plurality of furnace mounts are coupled to the furnace free of any mechanical fasteners.

53. (Previously presented) The combination of claim 51, wherein said first and second surfaces are parallel; and, wherein said main body is a molded of a polymeric material.

54. (Cancelled)

55. (Cancelled)

56. (Previously presented) A mount for supporting a furnace above the floor, comprising:

an integrally formed main body member having a first surface adapted to engage the floor and a second surface spaced from said first surface and adapted to support the furnace above the floor, said main body member including a pair of integrally formed upstanding wall members defining a locator portion to abut an outer surface of the furnace and position the furnace relative to said main body member; and

an adherent component connected with said main body member and located proximate said second surface, said adherent component including an adhesive surface adapted to engage and couple said main body member with the furnace.

57. (Previously presented) The mount of claim 26, wherein said adherent component is attached to said second surface, and wherein said adhesive surface is spaced from said second surface.

58. (Previously presented) The mount of claim 40, wherein said adherent component includes a vibration dampening portion located between said second surface and said adhesive surface.

EVIDENCE APPENDIX

A. Purchaser affidavits by Tim Jacobson, Dave Cournoyer, Ron Jackson, Stephen Hutcheson, John Knipe, Gene Lee, Rick Elston, and Jeff Malone, entered into the record Feb. 11, 2004.

B. Affidavit of Walter R. Key, a representative of the successor in interest of the Assignee of the present application, entered into the record Feb. 11, 2004.

C. U.S. Patent 3,669,066 to Smith, entered into the record Sept. 24, 2003.

D. U.S. Patent 3,794,181 to Canham, entered into the record Feb. 11, 2004.

E. U.S. 5,557,824 to Bushey, entered into the record Sept. 24, 2003.

RELATED PROCEEDINGS APPENDIX

[None]



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application:)

) Before the Examiner

Mark A. Stansbury)

Serial No. 10/669,829)

) Group Art Unit 3632

Filed September 24, 2003)

FURNACE MOUNT AND METHOD
OF INSTALLATION)

) Our Ref.: 27028-5

(1)

DECLARATION OF TIM JACOBSON

I, Tim Jacobson, hereby swear and affirm as follows:

1. *MECH DEPT MANAGER*
I am the ~~President~~ of Delcon, Inc. in Jackson, Wyoming. We are contractors, and as part of this work, we install and replace furnaces.

2. In particular, our company has purchased and used the NSA Products, Inc. Furnace Mounting Blocks. Such Furnace Mounting Blocks are the type generally illustrated in the drawings labeled Figs. 5-10 and attached here as Exhibit A.

3. Prior to NSA Products' furnace mounting block, I had never seen a light-weight furnace mounting block system of this type for elevating the furnace from the floor.

4. I consider the Furnace Mounting Block of NSA Products to be a fabulous invention. The Furnace Mounting Block system as compared to previous techniques, such as utilizing masonry blocks to hold the furnace off of the floor, leads to a significantly enhanced installation. The Furnace Mounting Block also improves the quality of the installer's work day by eliminating the need to carry heavy masonry blocks to the job site and affording in many jobs the option to

slide the furnace into position while seated on the furnace mounting blocks. When using masonry blocks the furnace and masonry blocks move separately when the furnace is adjusted into place. With the NSA Furnace Mounting Blocks the blocks and the furnace move together as one unit. Thereby, providing an installation time saving of about fifteen minutes for many installations.

5. In my experience, prior to NSA Products' Furnace Mounting Blocks, utilization of masonry blocks to install a furnace was a given – it was just the way it was done.

6. NSA Products' Furnace Mounting Block provides a simple but powerful solution to the problems associated with mounting furnaces above the floor. Because of the many benefits associated with the product, our company has adopted the Furnace Mounting Blocks as our preferred means for mounting furnaces above the floor.

7. Other than being a satisfied customer, I have no financial interest in NSA Products or its patent application.

8. I, being hereby warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001, declare that the facts set forth in the Declaration are true; all statements made of my own knowledge are true; and all statements made on information are believed to be true.

Date: 2/10/04By: Tim Jacobson

Tim Jacobson, President

MECH DEPT MANAGER

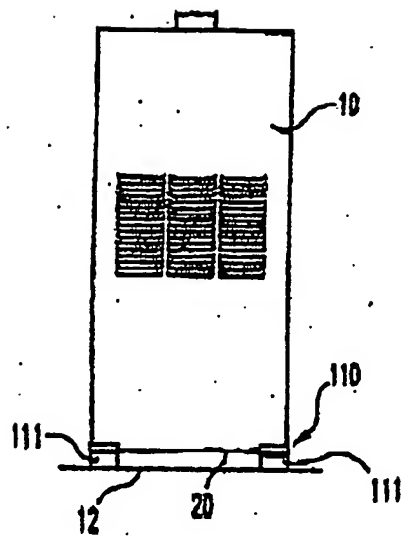


Fig. 5

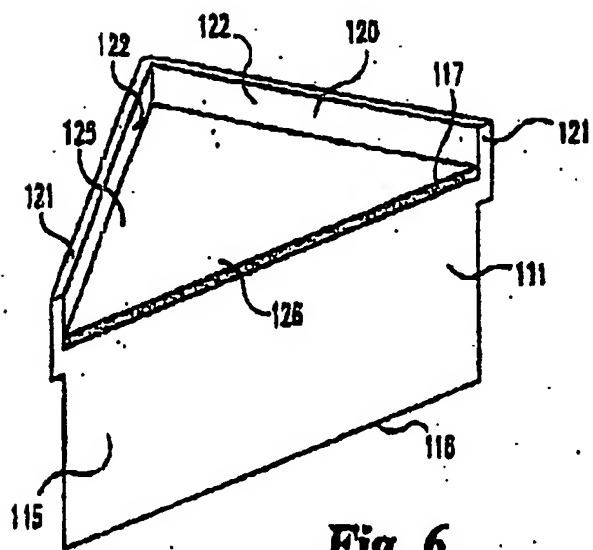


Fig. 6

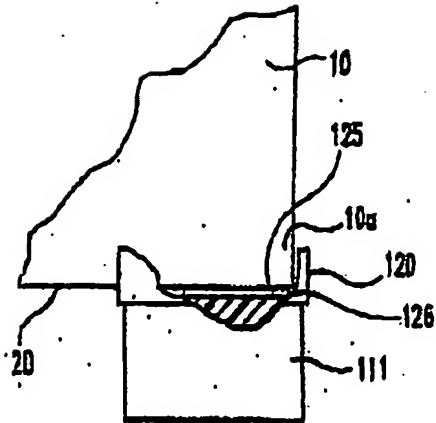


Fig. 7

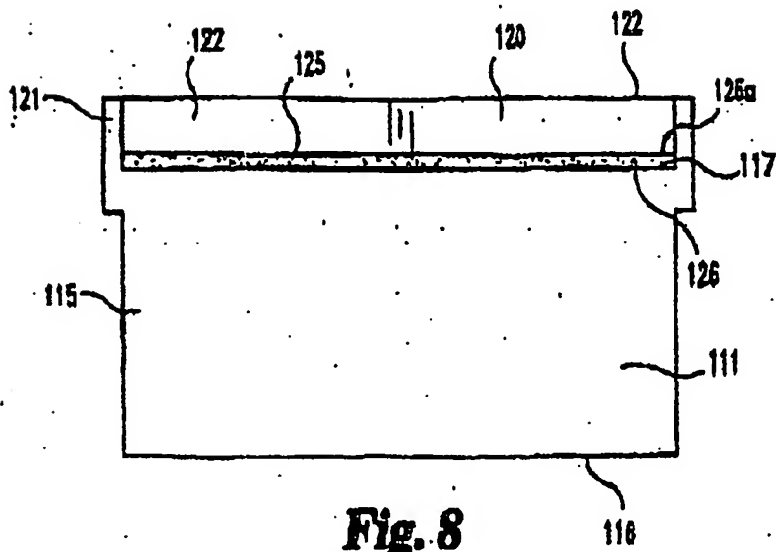


Fig. 8

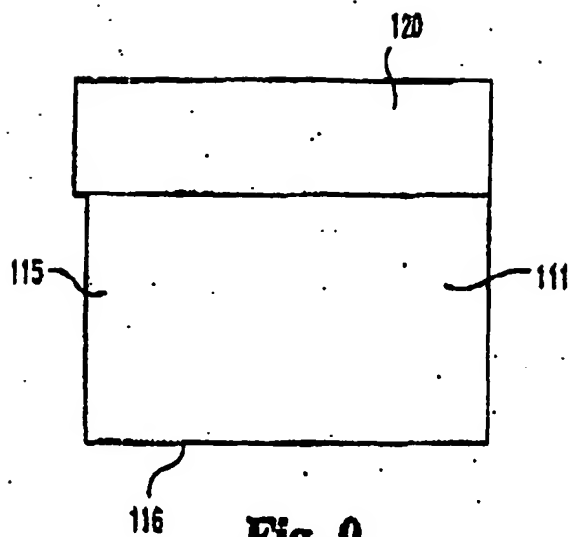


Fig. 9

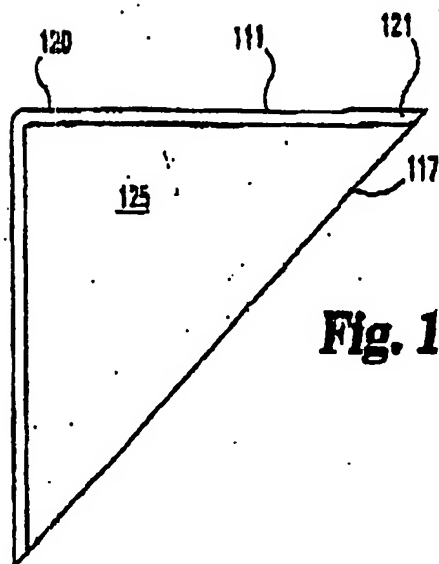


Fig. 10

(1)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application:)
Mark A. Stansbury) Before the Examiner
Serial No. 10/669,829)
Filed September 24, 2003) Group Art Unit 3632
FURNACE MOUNT AND METHOD)
OF INSTALLATION) Our Ref.: 27028-5

DECLARATION OF DAVE COURNOYER

I, Dave Cournoyer, hereby swear and affirm as follows:

1. I am the Service Manager at J. Maloney & Sons in Cedar Brook, New Jersey. We are an HVAC-R Service Contractor, and as part of our work we install residential and light commercial furnaces.
2. In particular, our company has purchased and used the NSA Products, Inc. Furnace Mounting Blocks. Such Furnace Mounting Blocks are the type generally illustrated in the drawings labeled Figs. 5-10 and attached here as Exhibit A.
3. Prior to NSA Products' furnace mounting block, I had never seen a light-weight furnace mounting block system of this type for elevating the furnace from the floor.
4. I consider the Furnace Mounting Block of NSA Products to be a fabulous invention. The Furnace Mounting Block system as compared to previous techniques, such as utilizing masonry blocks to hold the furnace off of the floor, leads to a significantly enhanced installation. The Furnace Mounting Block also improves the quality of the installer's work day by eliminating the need to carry

heavy masonry blocks to the job site and affording in many jobs the option to slide the furnace into position while seated on the furnace mounting blocks. When using masonry blocks the furnace and masonry blocks move separately when the furnace is adjusted into place. With the NSA Furnace Mounting Blocks the blocks and the furnace move together as one unit. Thereby, providing an installation time saving of about fifteen minutes for many installations.

5. In my experience, prior to NSA Products' Furnace Mounting Blocks, utilization of masonry blocks to install a furnace was a given - it was just the way it was done.

6. NSA Products' Furnace Mounting Block provides a simple but powerful solution to the problems associated with mounting furnaces above the floor. Because of the many benefits associated with the product, our company has adopted the Furnace Mounting Blocks as our preferred means for mounting furnaces above the floor.

7. Other than being a satisfied customer, I have no financial interest in NSA Products or its patent application.

8. I, being hereby warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001, declare that the facts set forth in the Declaration are true; all statements made of my own knowledge are true; and all statements made on information are believed to be true.

Date: 2-9-04

By: 
Dave Courmoyer

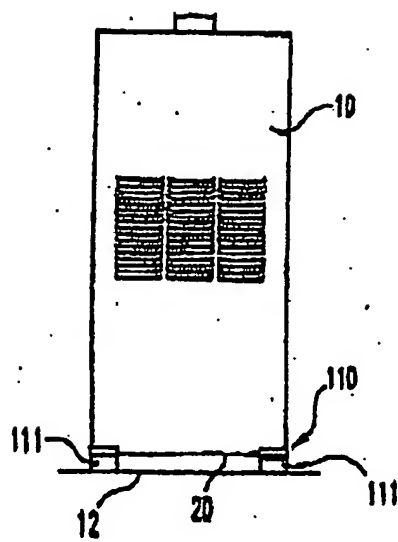


Fig. 5

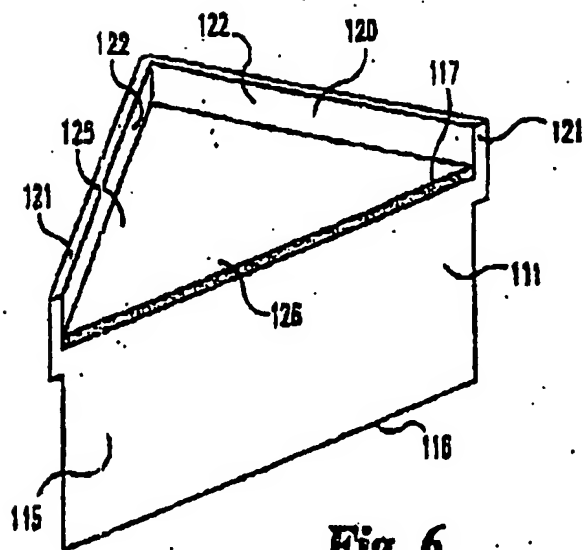


Fig. 6

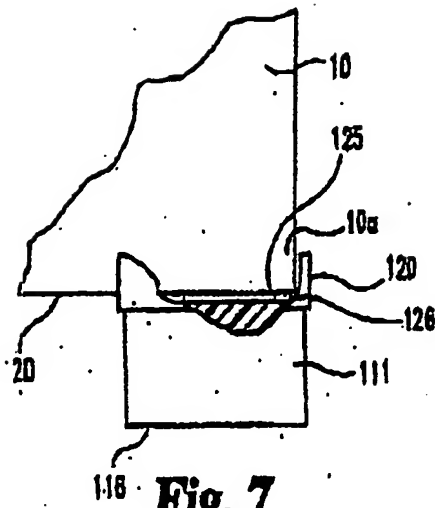


Fig. 7

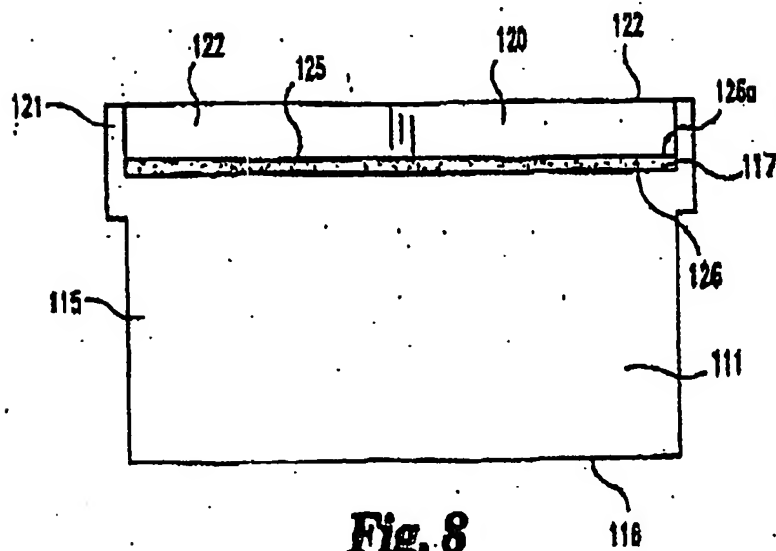


Fig. 8

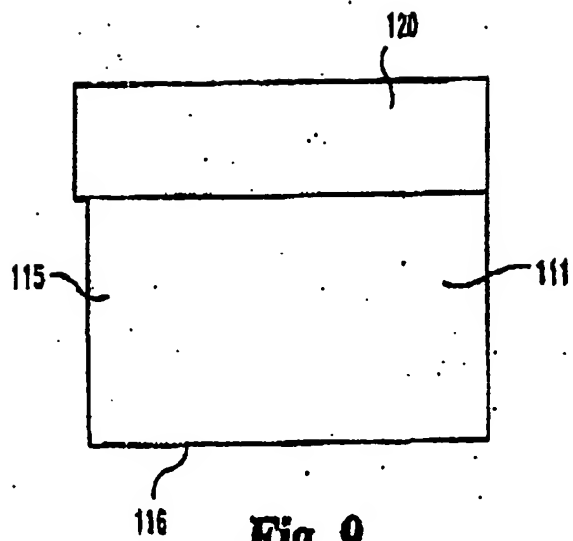


Fig. 9

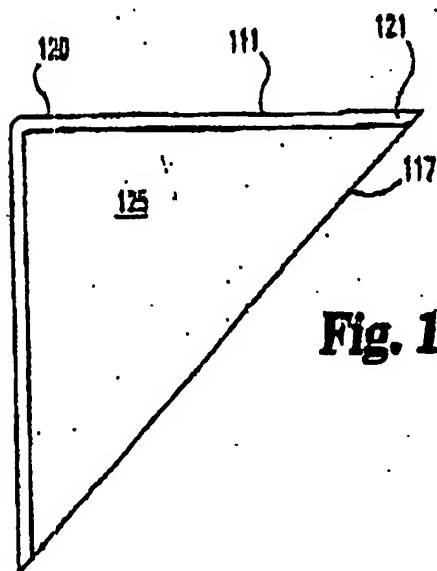


Fig. 10

02/09/2004 14:13 3178828022
FEB-09-2004 MON 01:55 PM

MARK IV ENVIRONMENTAL
FAX NO. 317 885 4145

PAGE 01
P. 01

(W)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application:)
Mark A. Stansbury) Before the Examiner
Serial No. 10/669,829)
Filed September 24, 2003) Group Art Unit 3632
FURNACE MOUNT AND METHOD)
OF INSTALLATION) Our Ref.: 27028-5

DECLARATION OF

I, Ron Jackson, hereby swear and affirm as follows:

1. I am President of Jackson Systems, Indianapolis, IN.

Our business is the manufacturing and wholesale distribution of heating, ventilation and air conditioning products. As part of this work we manufacture and sell furnace ventilation equipment and thermostats, and we purchase and re-sale NSA Products Furnace Mounting Blocks. It is important to note that I am an inventor and entrepreneur who have numerous patents issued on some of the products we manufacture at Jackson Systems for this industry and I recognize the intellectual property and unique inventiveness of the NSA Products' Furnace Mounting Block.

2. In particular, our company has purchased and re-sold the NSA Products, Inc. Furnace Mounting Blocks. Such Furnace Mounting Blocks are the type generally illustrated in the drawings labeled Figs. 5-10 and attached here as Exhibit A.

02/09/2004 14:13 3178828022

FEB-09-2004 MON 01:55 PM

MARK IV ENVIRONMENTAL
FAX NO. 317 885 4145

PAGE 02
P. 02

3. Prior to NSA Products' furnace mounting block, I had never seen a light-weight furnace mounting block system of this type for elevating the furnace from the floor.

4. I consider the Furnace Mounting Block of NSA Products to be a fabulous invention. The Furnace Mounting Block system as compared to previous techniques, such as utilizing masonry blocks to hold the furnace off of the floor, leads to a significantly enhanced installation. The Furnace Mounting Block also improves the quality of the installer's work day by eliminating the need to carry heavy masonry blocks to the job site and affording in many jobs the option to slide the furnace into position while seated on the furnace mounting blocks. When using masonry blocks the furnace and masonry blocks move separately when the furnace is adjusted into place. With the NSA Furnace Mounting Blocks the blocks and the furnace move together as one unit. Thereby, providing an installation time saving of about fifteen minutes for many installations.

5. In my experience, prior to NSA Products' Furnace Mounting Blocks, utilization of masonry blocks to install a furnace was a given - it was just the way it was done.

6. NSA Products' Furnace Mounting Block provides a simple but powerful solution to the problems associated with mounting furnaces above the floor. Because of the many benefits associated with the product, our company has adopted the Furnace Mounting Blocks as our recommended preferred means for mechanical service contractors to mount furnaces above the floor.

7. Other than being a satisfied customer, I have no financial interest in NSA Products or its patent application.

8. I, being hereby warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001, declare

02/09/2004 14:13 3178828822

FEB-09-2004 MON 01:58 PM

MARK IV ENVIRONMENTA

FAX NO. 317 885 4145

PAGE 03

P. U3

that the facts set forth in the Declaration are true; all statements made of my own
knowledge are true; and all statements made on information are believed to be
true.

Date:

2-9-04

By:

Ronald E Jackson

02/09/2004 14:13 3178828022

FEB-09-2004 MON 01:56 PM

Sent By: WOODARD ELPHARDT;

MARK IV ENVIRONMENTAL
FAX NO. 317 865 4145

PAGE 04
P. 04

1 317 867 7641;

06 Feb 04 2:11PM; Job 811; Page 4/8

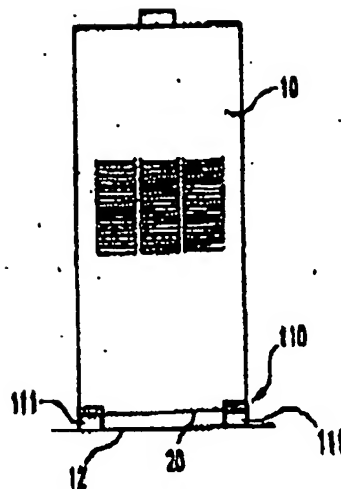


Fig. 5

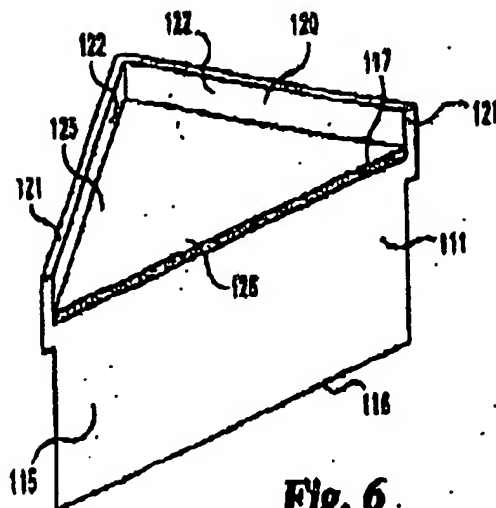


Fig. 6

02/09/2004 14:13 3178828022

MARK IV ENVIRONMENTA

PAGE 05

FEB-09-2004 MON 01:56 PM

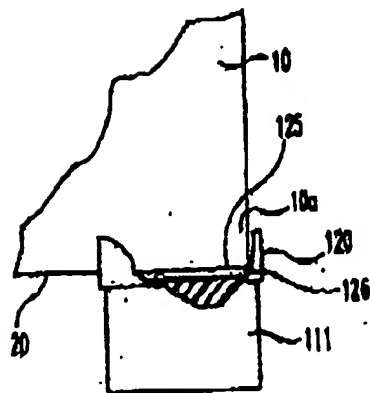
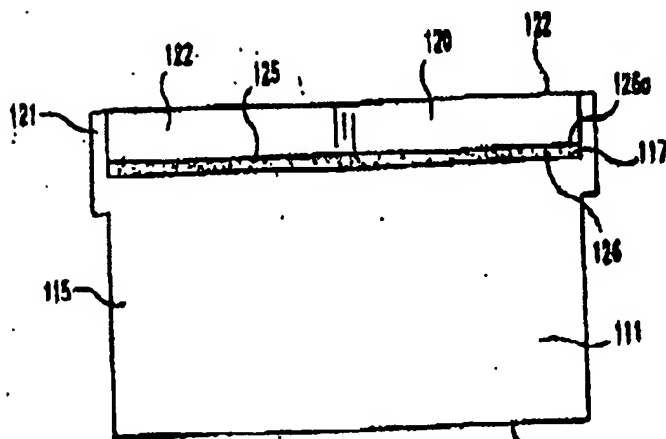
FAX NO. 317 865 4145

P. 05

Sent By: WOODARD EDWARD;

1 617 627 7581;

05 Feb 04 2:11PM Job 011; Page 5/8

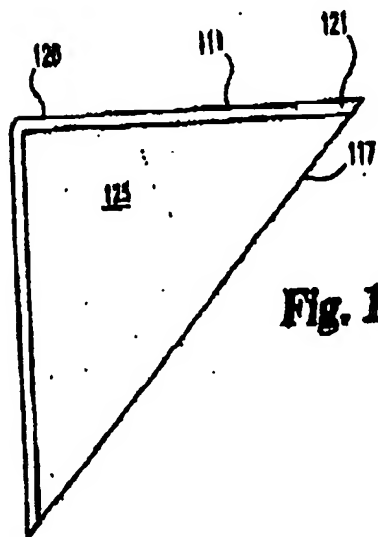
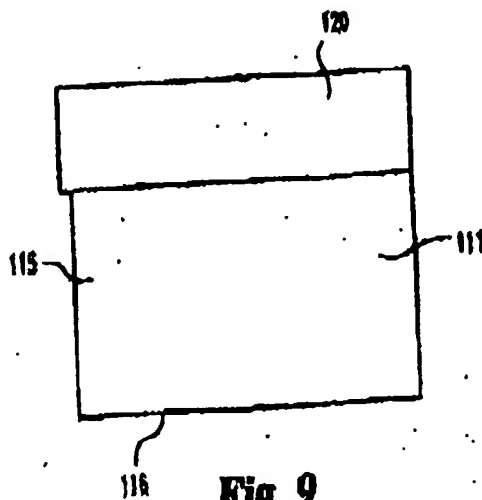
**Fig. 7****Fig. 8**

FEB-09-2004 MON 01:58 PM

sent by: WOODMAN ENHARDTJ

1 217 887 7581J

03 Feb 04 2:11PM-Job 811;Page 6/8



(1)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application: }
Mark A. Stansbury } Before the Examiner
Serial No. 10/660,839 }
Filed September 24, 2003 } Group Art Unit 2632
FURNACE MOUNT AND METHOD }
OF INSTALLATION } Our Ref: 27028-5

DECLARATION OF

1. Stephen Hutcherson hereby swear and affirm as follows:

1. I am Owner (title)

Indianapolis, IN 46228 (location)

Our business is S&H Contractors Inc. As part of this work we Install Furnaces & Air Cond.

2. In particular, our company has purchased and used the NSA Products, Inc. Furnace Mounting Blocks. Such Furnace Mounting Blocks are the type generally illustrated in the drawings labeled Figs. 5-10 and attached here as Exhibit A.

3. Prior to NSA Products' furnace mounting block, I had never seen a lightweight furnace mounting block system of this type for elevating the furnace from the floor.

4. I consider the Furnace Mounting Block of NSA Products to be a fabulous invention. The Furnace Mounting Block system as compared to previous techniques, such as utilizing masonry blocks to hold the furnace off of the floor, leads to a significantly enhanced installation. The Furnace Mounting Block also

02/09/2004 17:42 017852822

PART IV ENVIRONMENTA

PAGE 02

improves the quality of the installer's work day by eliminating the need to carry heavy masonry blocks to the job site and affording in many jobs the option to slide the furnace into position while seated on the furnace mounting blocks. When using masonry blocks the furnace and masonry blocks move separately when the furnace is adjusted into place. With the NSA Furnace Mounting Blocks the blocks and the furnace move together as one unit. Thereby, providing an installation time saving of about fifteen minutes for many installations.

5. In my experience, prior to NSA Products' Furnace Mounting Blocks, utilization of masonry blocks to install a furnace was a given - it was just the way it was done.

6. NSA Products' Furnace Mounting Block provides a simple but powerful solution to the problems associated with mounting furnaces above the floor. Because of the many benefits associated with the product, our company has adopted the Furnace Mounting Blocks as our preferred means for mounting furnaces above the floor.

7. Other than being a satisfied customer, I have no financial interest in NSA Products or its patent application.

8. I, being hereby warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001, declare that the facts set forth in the Declaration are true; all statements made of my own knowledge are true; and all statements made on information are believed to be true.

Date: 2-9-04

By: Stephen R. Hutchison
Owner

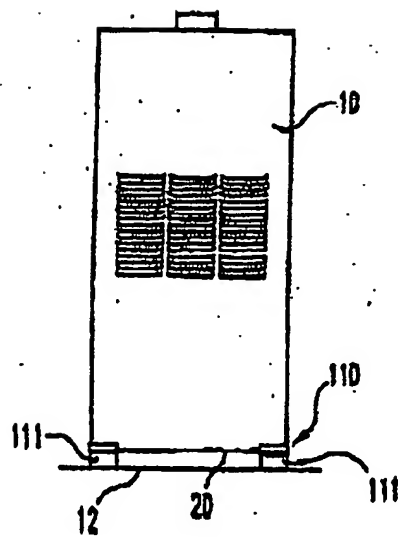


Fig. 5

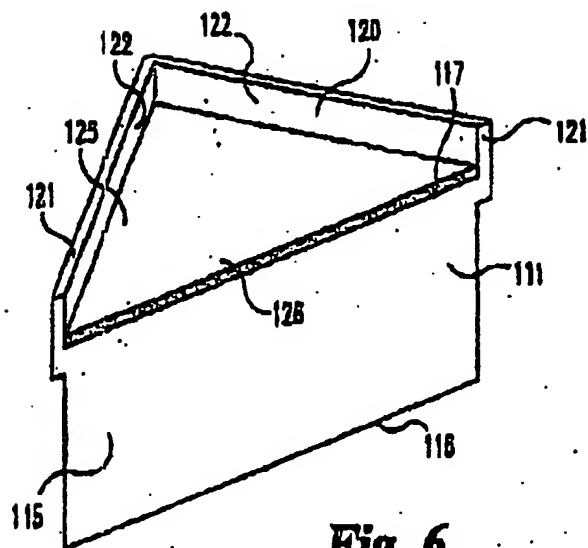


Fig. 6

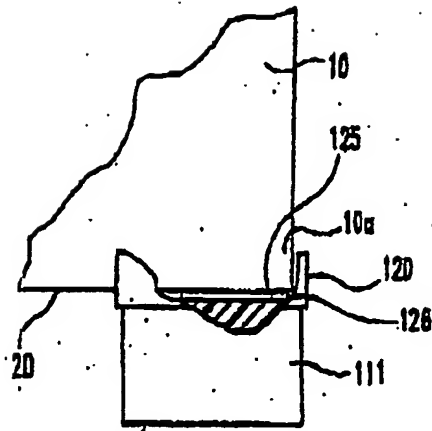


Fig. 7

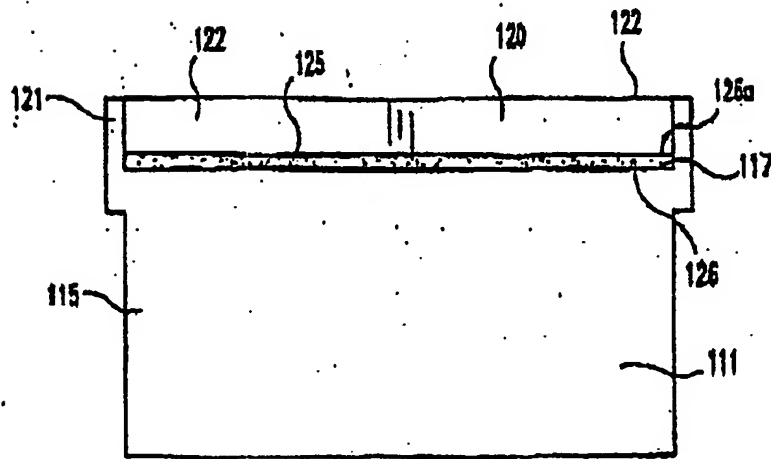


Fig. 8

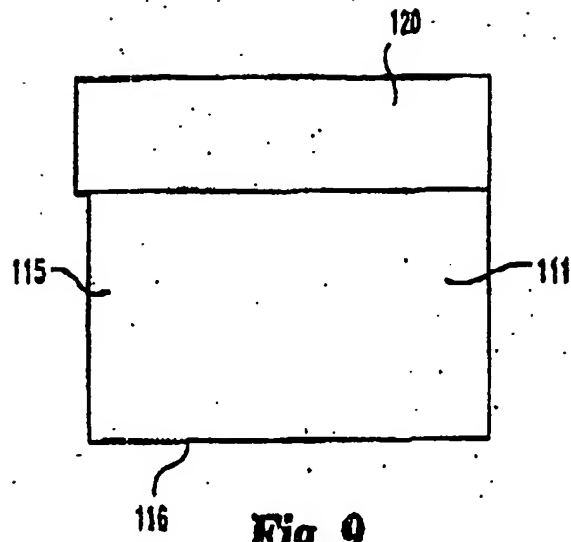


Fig. 9

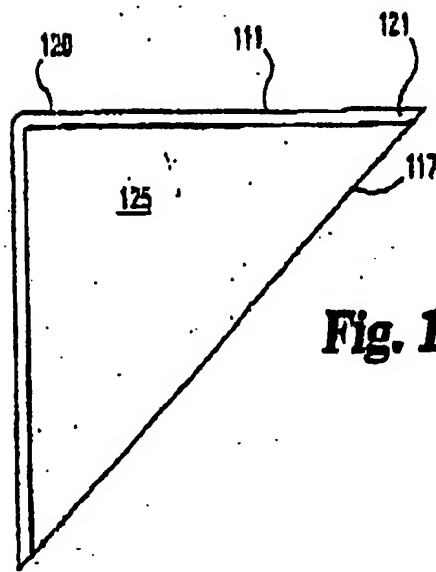


Fig. 10

02/09/2004 08:58

3178828822

MARK IV ENVIRONMENTA

PAGE 82

(1)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent Application:)
Mark A. Sansbury) Before the Examiner
Serial No. 0/669,829)
Filed September 24, 2003) Group Art Unit 3632
FURNACE MOUNT AND METHOD)
OF INSTALLATION) Our Ref.: 27028-5

DECLARATION OF JOHN KNIPE

1. John Knipe, hereby swear and affirm as follows:

1. I am the President of Knipe Heating and Cooling. Our business is located in Greenwood, Indiana. As part of our service, we install and replace gas furnaces.
2. In particular, our company has purchased and used the NSA Products, Inc. Furnace Mounting Blocks. Such Furnace Mounting Blocks are the type generally illustrated in the drawings labeled Figs. 5-10 and attached here as Exhibit A.
3. Prior to NSA Products' furnace mounting block, I had never seen a light-weight furnace mounting block system of this type for elevating the furnace from the floor.
4. I consider the Furnace Mounting Block of NSA Products to be a fabulous invention. The Furnace Mounting Block system as compared to previous techniques, such as utilizing masonry blocks to hold the furnace off of the floor, leads to a significantly enhanced installation. The Furnace Mounting Block also improves the quality of the installer's work day by eliminating the need to carry

heavy masonry blocks to the job site and affording in many jobs the option to slide the furnace into position while seated on the furnace mounting blocks. When using masonry blocks the furnace and masonry blocks move separately when the furnace is adjusted into place. With the NSA Furnace Mounting Blocks the blocks and the furnace move together as one unit. Thereby, providing an installation time saving of about fifteen minutes for many installations.

5 In my experience, prior to NSA Products' Furnace Mounting Blocks, utilization of masonry blocks to install a furnace was a given - it was just the way it was done.

6 NSA Products' Furnace Mounting Block provides a simple but powerful solution to the problems associated with mounting furnaces above the floor. Because of the many benefits associated with the product, our company has adopted the Furnace Mounting Blocks as our preferred means for mounting furnaces above the floor.

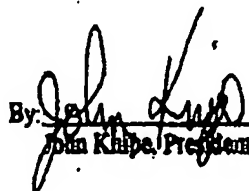
7 Other than being a satisfied customer, I have no financial interest in NSA Products or its patent application.

8 I, being hereby warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001, declare that the facts set forth in the Declaration are true, all statements made of my own knowledge are true; and all statements made on information are believed to be true.

Date:

2-9-04

By:


John Knife, President

02/09/2004 08:5

3178828022

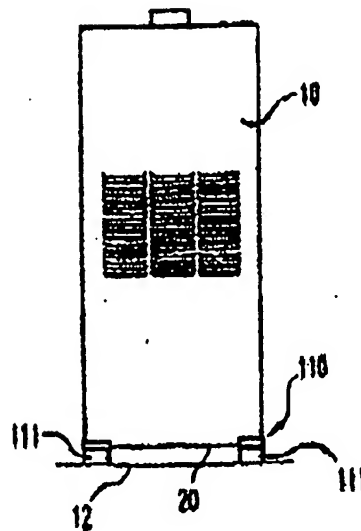
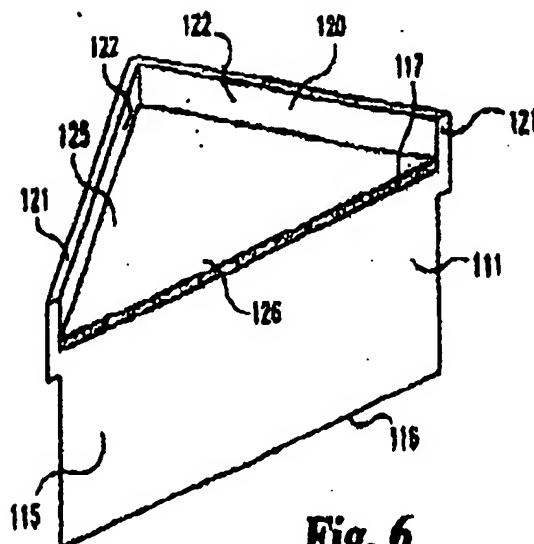
Sent By: WOODARD WARDT;

MARK IV ENVIRONMENTA

PAGE 84

1 317 627 7581;

05 Feb 04 2:11PM; Job 811; Page 4/8

**Fig. 5****Fig. 6**

02/09/2004 08:58

3178828022

DRAWN BY: WOODWARD B. WARD

MARK IV ENVIRONMENTA

1 017 037 7501;

05 Feb 04 2:11PM; Job 011; Page 5/6

PAGE 05

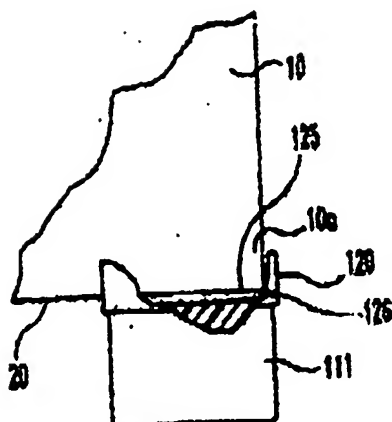


Fig. 7

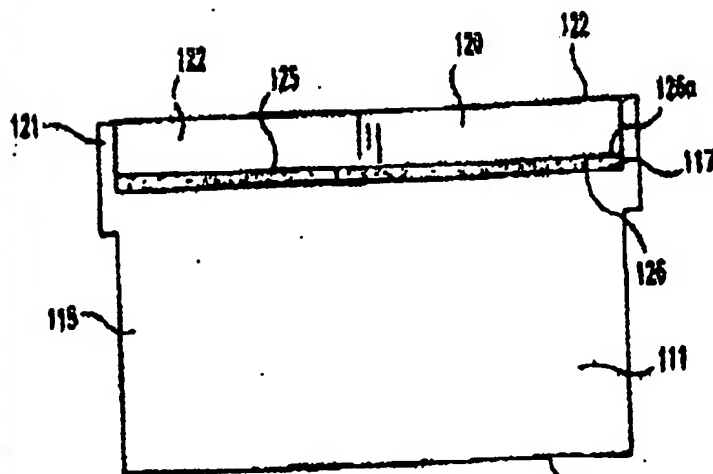
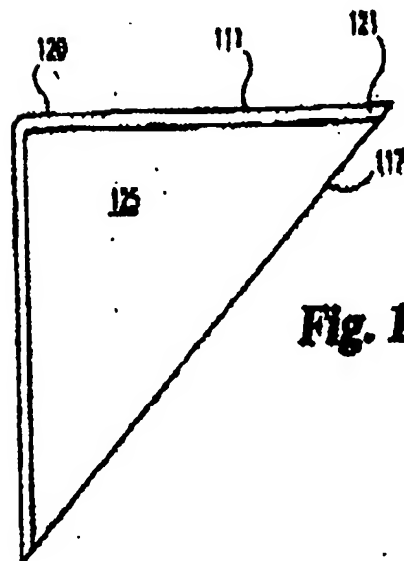
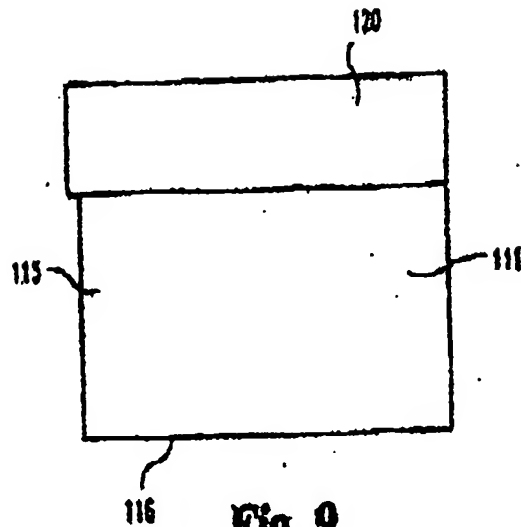


Fig. 8



**JOHN KNIPE HEATING & COOLING, INC.**

908 Wood Creek Place • Greenwood, IN 46142

Phone: 887-2138 • 1-800-658-6618

Providing quality HVAC service with a personal touch

FAX TRANSMITTAL

DATE: 2-9-04

TO: Mauh

FROM: SK

RE:

PAGES (including cover page):

6

COMMENTS:

(I)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application)	
Mark A. Stansbury)	Before the Examiner
Serial No. 10/669,129)	
Filed September 24, 2003)	Group Art Unit 3632
FURNACE MOUNT AND METHOD OF INSTALLATION)	Our Ref.: 27028-5

DECLARATION OF GENE LEE

I, Gene Lee, hereby swear and affirm as follows:

1. I am the owner of Lee's Refrigeration in Seward, Nebraska. Our business activities include the installation and replacement of gas furnaces.
2. In particular, our company has purchased and used the NSA Products, Inc. Furnace Mounting Blocks. Such Furnace Mounting Blocks are the type generally illustrated in the drawings labeled Figs. 5-10 and attached here as Exhibit A.
3. Prior to NSA Products' furnace mounting block, I had never seen a light-weight furnace mounting block system of this type for elevating the furnace from the floor.
4. I consider the Furnace Mounting Block of NSA Products to be a fabulous invention. The Furnace Mounting Block system as compared to previous techniques, such as utilizing masonry blocks to hold the furnace off of the floor, leads in a significantly enhanced installation. The Furnace Mounting Block also improves the quality of the installer's work day by eliminating the need to carry heavy masonry blocks to the job site and affording in many jobs the option to

Slide the furnace into position while seated on the furnace mounting blocks. When using masonry blocks the furnace and masonry blocks move separately when the furnace is adjusted into place. With the NSA Furnace Mounting Blocks the blocks and the furnace move together as one unit. Thereby, providing an installation time saving of about fifteen minutes for many installations.

5. In my experience, prior to NSA Products' Furnace Mounting Blocks, utilization of masonry blocks to install a furnace was a given - it was just the way it was done.

6. NSA Products' Furnace Mounting Block provides a simple but powerful solution to the problems associated with mounting furnaces above the floor. Because of the many benefits associated with the product, our company has adopted the Furnace Mounting Blocks as our preferred means for mounting furnaces above the floor.

7. Other than being a satisfied customer, I have no financial interest in NSA Products or its patent application.

8. I, being hereby warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001, declare that the facts set forth in the Declaration are true; all statements made of my own knowledge are true; and all statements made on information are believed to be true.

Date: 2/7/04

By: [Signature]
Gene Leo

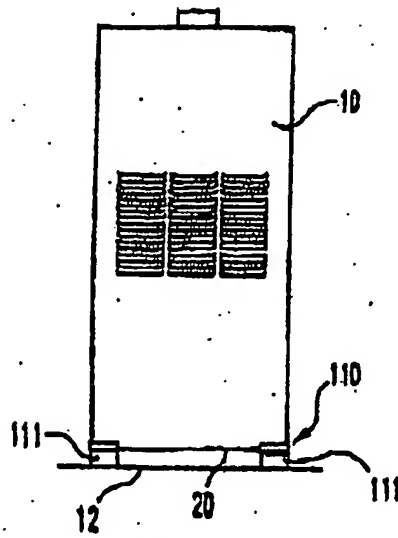


Fig. 5

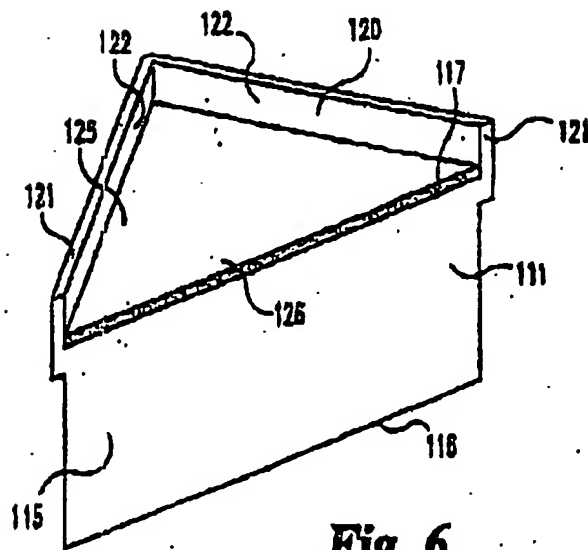


Fig. 6

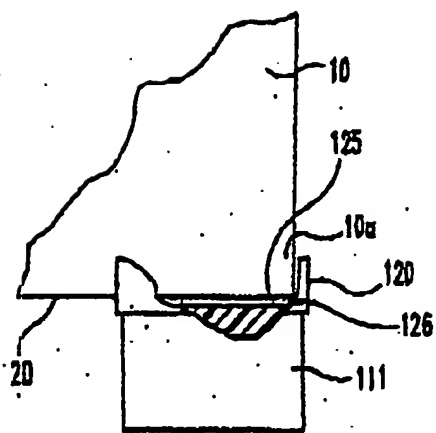


Fig. 7

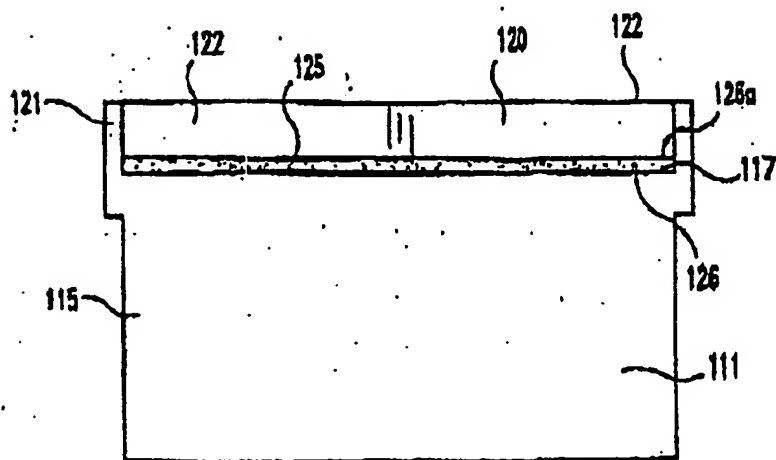


Fig. 8

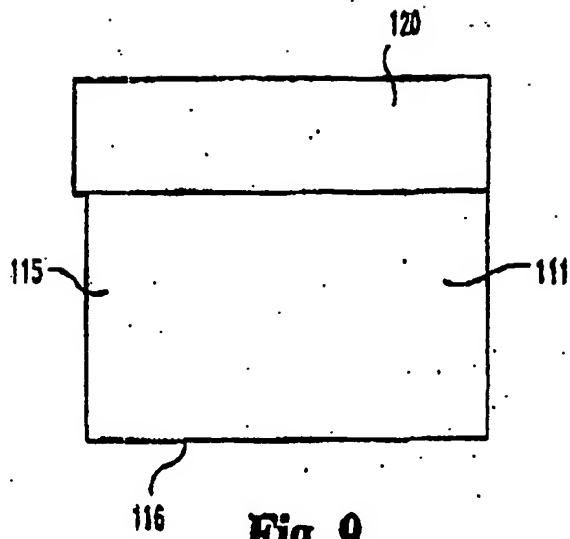


Fig. 9

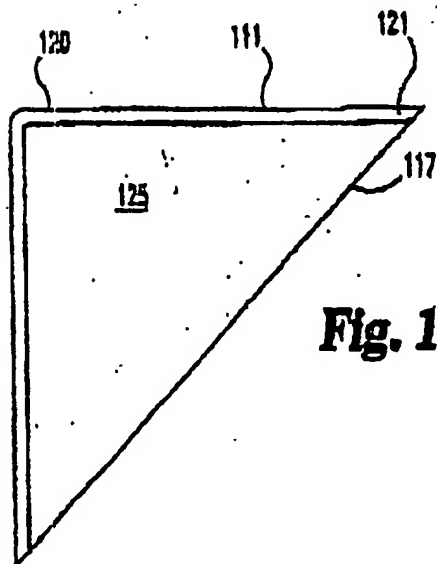


Fig. 10

(1)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application:	}	Before the Examiner
Mark A. Stanbury		
Serial No. 10/569,829	}	Group Art Unit 3632
Filed September 24, 2003		
FURNACE MOUNT AND METHOD OF INSTALLATION	}	Our Ref.: 27028-5

DECLARATION OF RICK ELSTON

I, Rick Elston, hereby swear and affirm as follows:

1. I am the owner of Rick's Heating & Air Conditioning. My business is located in Paulding Ohio. Our business installs and replaces gas furnaces.
2. In particular, our company has purchased and used the NSA Products, Inc. Furnace Mounting Blocks. Such Furnace Mounting Blocks are the type generally illustrated in the drawings labeled Figs. 3-10 and attached here as Exhibit A.
3. Prior to NSA Products' furnace mounting block, I had never seen a light-weight furnace mounting block system of this type for elevating the furnace from the floor.
4. I consider the Furnace Mounting Block of NSA Products to be a fabulous invention. The Furnace Mounting Block system as compared to previous techniques, such as utilizing masonry blocks to hold the furnace off of the floor, leads to a significantly enhanced installation. The Furnace Mounting Block also improves the quality of the installer's work day by eliminating the need to carry heavy masonry blocks to the job site and affording in many jobs the option to

slide the furnace into position while seated on the furnace mounting blocks. When using masonry blocks the furnace and masonry blocks move separately when the furnace is adjusted into place. With the NSA Furnace Mounting Blocks the blocks and the furnace move together as one unit. Thereby, providing an installation time saving of about fifteen minutes for many installations.

5. In my experience, prior to NSA Products' Furnace Mounting Blocks, utilization of masonry blocks to install a furnace was a given - it was just the way it was done.

6. NSA Products' Furnace Mounting Block provides a simple but powerful solution to the problems associated with mounting furnaces above the floor. Because of the many benefits associated with the product, our company has adopted the Furnace Mounting Blocks as our preferred means for mounting furnaces above the floor.

7. Other than being a satisfied customer, I have no financial interest in NSA Products or its patent application.

8. I, being hereby warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001, declare that the facts set forth in the Declaration are true; all statements made of my own knowledge are true; and all statements made on information are believed to be true.

Date

2-9-04

By


Rick Elston

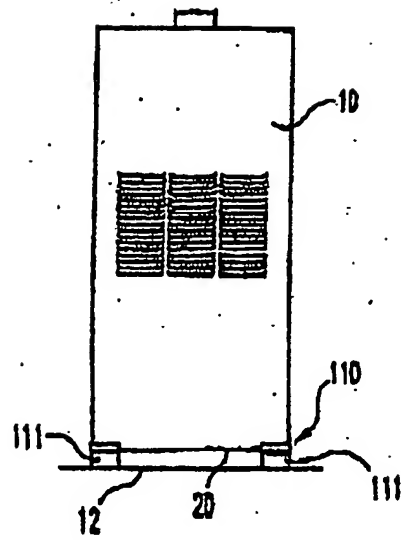


Fig. 5

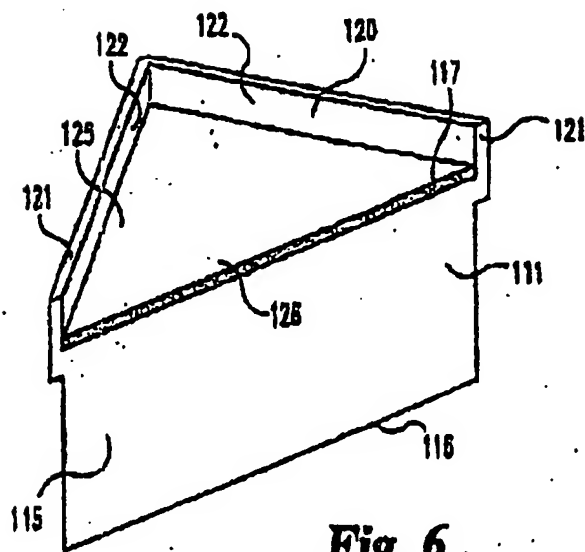
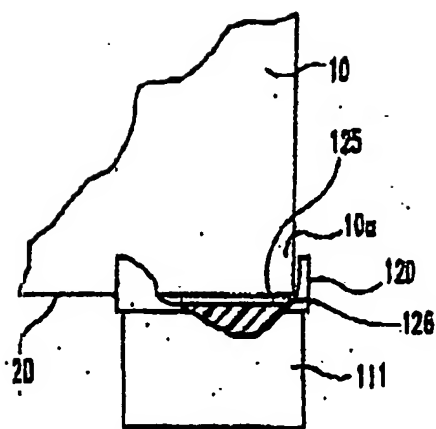


Fig. 6



116 **Fig. 7**

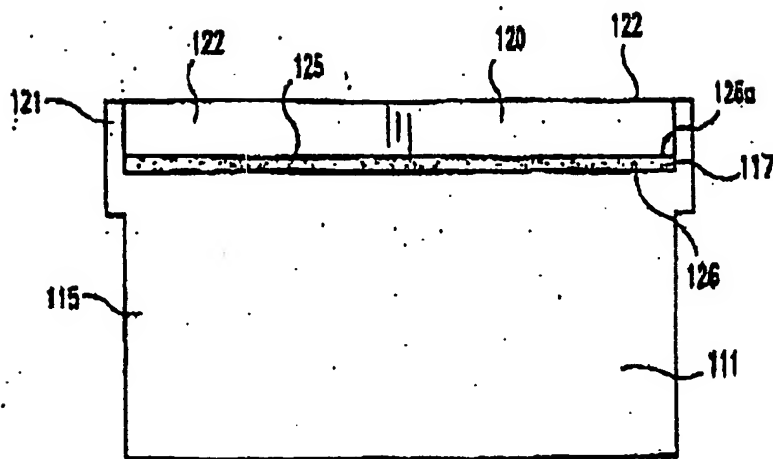


Fig. 8

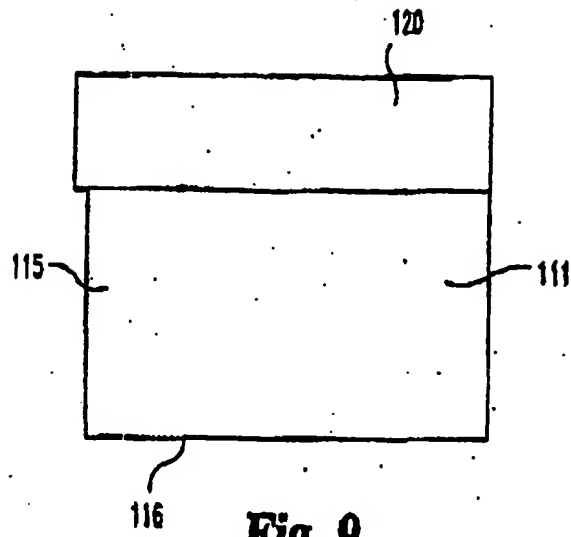


Fig. 9

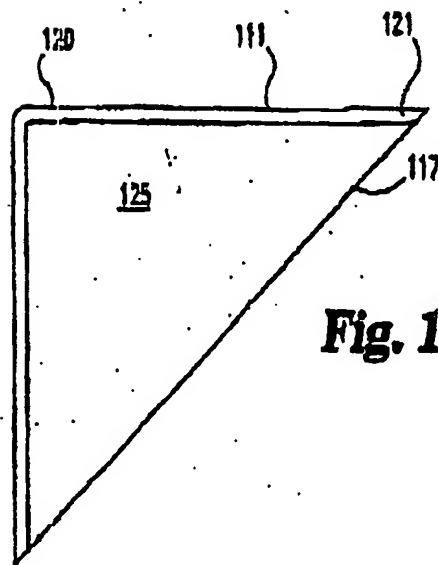


Fig. 10

(1)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application:

Mark A. Stansbury

Serial No. 10/669,829

Filed September 24, 2003

**FURNACE MOUNT AND METHOD
OF INSTALLATION**

) Before the Examiner

) Group Art Unit 3632

) Our Ref: 27028-5

DECLARATION OF JEFF MALONE

I, Jeff Malone, hereby swear and affirm as follows:

1. I am the President of Temperature Control Specialties, Inc. of Indianapolis, Indiana. As part of our services, we install and replace upflow furnaces.
2. In particular, our company has purchased and used the NSA Products, Inc. Furnace Mounting Blocks. Such Furnace Mounting Blocks are the type generally illustrated in the drawings labeled Figs. 3-10 and attached here as Exhibit A.
3. Prior to NSA Products' furnace mounting block, I had never seen a light-weight furnace mounting block system of this type for elevating the furnace from the floor.
4. I consider the Furnace Mounting Block of NSA Products to be a fabulous invention. The Furnace Mounting Block system as compared to previous techniques, such as utilizing masonry blocks to hold the furnace off of the floor, leads to a significantly enhanced installation. The Furnace Mounting Block also improves the quality of the installer's work day by eliminating the need to carry

heavy masonry blocks to the job site and affording in many jobs the option to slide the furnace into position while seated on the furnace mounting blocks. When using masonry blocks the furnace and masonry blocks move separately when the furnace is adjusted into place. With the NSA Furnace Mounting Blocks the blocks and the furnace move together as one unit. Thereby, providing an installation time saving of about fifteen minutes for many installations.

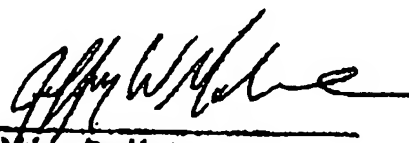
5. In my experience, prior to NSA Products' Furnace Mounting Blocks, utilization of masonry blocks to install a furnace was a given - it was just the way it was done.

6. NSA Products' Furnace Mounting Block provides a simple but powerful solution to the problems associated with mounting furnaces above the floor. Because of the many benefits associated with the product, our company has adopted the Furnace Mounting Blocks as our preferred means for mounting furnaces above the floor.

7. Other than being a satisfied customer, I have no financial interest in NSA Products or its patent application.

8. I, being hereby warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001, declare that the facts set forth in the Declaration are true; all statements made of my own knowledge are true; and all statements made on information are believed to be true.

Date: 2/9/04

By: 
Jeff Makino, President

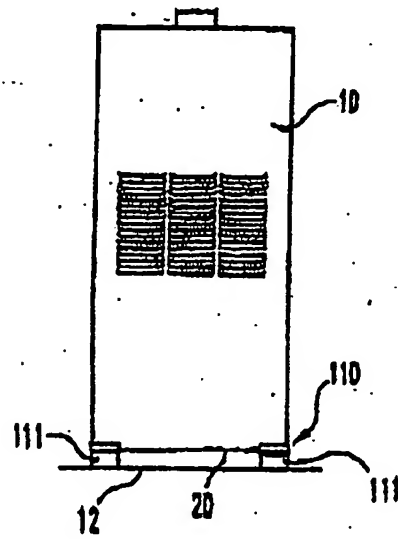


Fig. 5

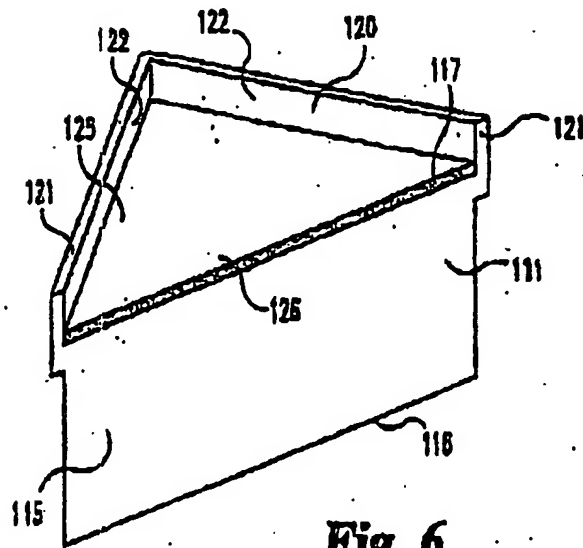


Fig. 6

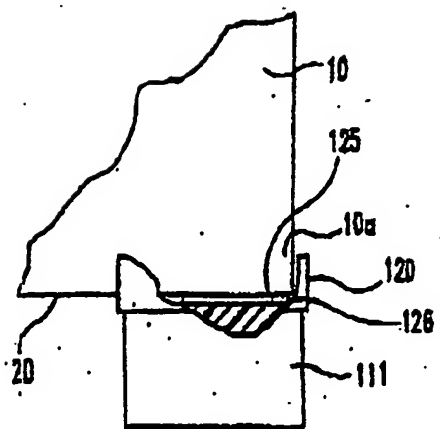


Fig. 7

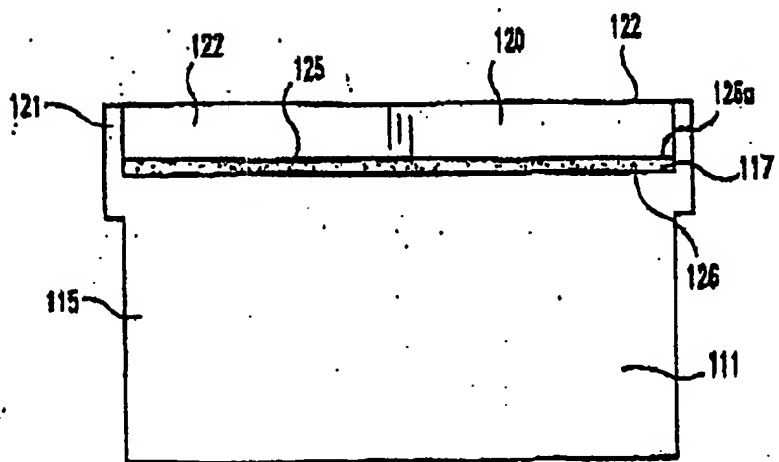


Fig. 8

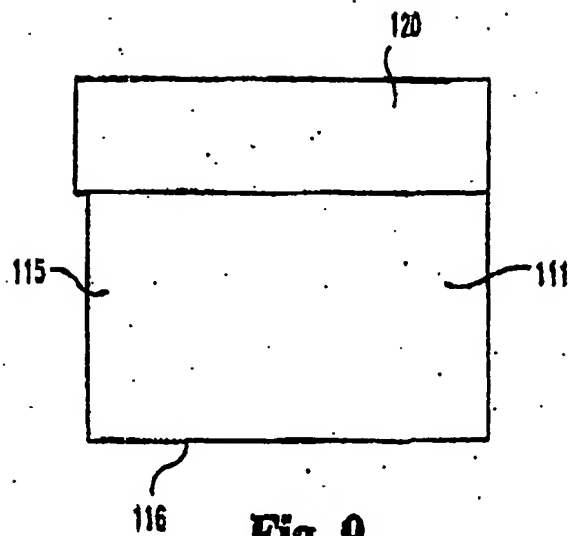


Fig. 9

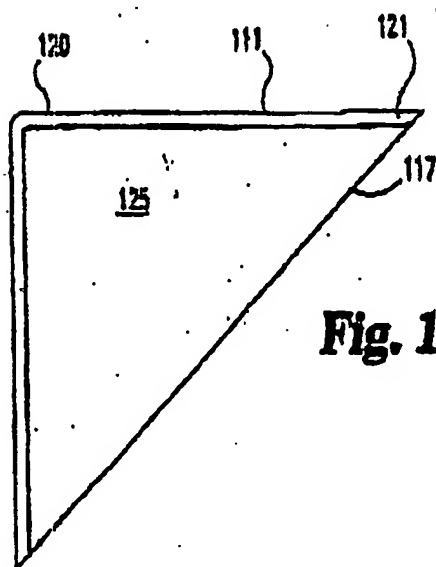


Fig. 10

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application:)
) Before the Examiner
Mark A. Stansbury) Naschica Sanders Morrison
)
Serial No. 10/669,829) Group Art Unit 3632
)
Filed September 24, 2003) Via Hand Delivery
)
FURNACE MOUNT AND METHOD)
OF INSTALLATION) February 11, 2004

**RECEIPT OF HAND DELIVERY OF
DECLARATION UNDER 37 C.F.R. §1.132 OF WALTER R. KEY**

The undersigned representative from Group Art Unit 3632 has received by hand delivery on February 11, 2004, a Declaration under 37 C.F.R. §1.132 of Walter R. Key. Acknowledgement by the United States Patent Office representative is set forth below.

Date: 2/11/04

Signature: Naschica

Printed Name: NASCHICA MORRISON

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:)
Mark A. Stansbury) Before the Examiner
) Naschica Sanders Morrison
)
Serial No. 10/669,829)
) Group Art Unit 3632
Filed September 24, 2003)
)
FURNACE MOUNT AND)
METHOD OF INSTALLATION)

DECLARATION UNDER 37 C.F.R. §1.132

I, Walter R. Key, hereby declare as follows:

1. I am the Managing Member of NSA LLC, which is the successor in interest of NSA Corporation (hereinafter NSA). NSA is the assignee of U. S. Patent Application No. 10/669,829 (hereinafter "STANSBURY APPLICATION") that is a continuation of U. S. Patent Application No. 09/941,524 attached as Exhibit A. I have about fourteen years of experience in running companies related to the development and/or manufacture and/or sale and/or servicing of heating and air conditioning products.
2. Mark A. Stansbury, the inventor in the STANSBURY APPLICATION, has been in the business of selling and/or servicing heating and air conditioning systems for about thirty-one years. Mr. Stansbury appreciated that there was a need for an improved system for mounting furnaces. This appreciation of a long-felt but unmet need led to the inspiration for the Furnace Mounting Blocks and system set forth in the STANSBURY APPLICATION.
3. NSA the assignee of the STANSBURY APPLICATION was founded on or about August 1, 2001, to commercialize the Furnace Mounting Blocks associated with the STANSBURY APPLICATION. The Furnace Mounting Blocks commercialized by NSA are shown in an early advertisement in Exhibit B and further set forth in drawings

5-10 of the STANSBURY APPLICATION. The undersigned wishes to clarify that the vibration-absorbing pad is now an elastomeric material.

4. During the 2001 calendar year, the Furnace Mounting Blocks were introduced to the market by NSA. At least fifty thousand Furnace Mounting Blocks were sold during the 2001 calendar year through heating and air conditioning wholesalers throughout the United States. Various manufacturers' representatives promoted the Furnace Mounting Blocks product for NSA by calling on wholesalers in the United States. These manufacturers' representatives primarily called on wholesalers located in the Midwest region of the United States. No extraordinary efforts were made by NSA to market or promote the sale of the Furnace Mounting Blocks shown in an early advertisement in Exhibit B and further set forth in drawings 5-10 of the STANSBURY APPLICATION.
5. During the 2002 calendar year, Bramec Corporation of South Dakota entered into an exclusive licensing agreement with NSA to manufacture and distribute the Furnace Mounting Blocks set forth in Exhibit-B and in drawings 5-10 of the STANSBURY APPLICATION. Bramec Corporation is a master distributor and manufacturer of products for the air conditioning, heating, plumbing, and refrigeration industries. It is generally recognized that Bramec Corporation is one of the major players in this industry. During the 2002 calendar year, the commercialization of the Furnace Mounting Blocks by NSA and under the license agreement with Bramec Corporation resulted in sales of about 129,000 Furnace Mounting Blocks.
6. During the 2003 calendar year, Bramec Corporation under the exclusive licensing agreement with NSA manufactured and distributed the Furnace Mounting Blocks set forth in Exhibit B and in drawings 5-10 of the STANSBURY APPLICATION. During the 2003 calendar year, the commercialization of the licensed Furnace Mounting Blocks by Bramec Corporation resulted in sales of about 174,000 Furnace Mounting Blocks.
7. NSA spent less than \$12,000 on advertising for the Furnace Mounting Blocks for the years 2001 and 2002 combined. The advertising included the preparation, printing and mailing of a mass mailing to wholesalers, an advertisement in a quarterly HVACR

Distribution News, and two advertisements in an Indiana Contractors Magazine. NSA has spent no further on advertising the Furnace Mounting Block.

8. Bramec Corporation has posted the Furnace Mounting Block on their Web site and distributed a relatively small number of samples to various wholesalers within the United States. The undersigned is unaware of any further substantial advertising activity by Bramec Corporation.
9. The sales volume of the Furnace Mounting Blocks during the introductory 2001 calendar year by NSA, the industry recognition exhibited by Bramec Corporation seeking and entering into a license agreement with NSA, and the ensuing sales volume during calendar year 2002 by NSA and Bramec Corporation of the licensed product support that a significant need is being satisfied by the Furnace Mounting Blocks. The continued growth in sales volume during calendar year 2003 by Bramec Corporation is further evidence that this product is satisfying a significant need.
10. The sales volumes reflected herein are for Furnace Mounting Blocks that were sold by themselves and were not packaged with other products. The Furnace Mounting Blocks are not packaged or combined with other products in a package deal. The sales volumes do not include any sales to affiliates or related companies.
11. The undersigned has included herewith in Exhibit C the Declarations of independent parties as to their opinion of the Furnace Mounting Block and the many benefits associated with the items. Each of the Declarants is not employed by and/or does not have any financial interest in NSA, Bramec Corporation, the Furnace Mounting Blocks invention and/or the STANSBURY APPLICATION.
12. NSA's only business relationship with Bramec Corporation is the exclusive license agreement that the Furnace Mounting Blocks are made and sold under. NSA and/or its principals have no other business relationship with Bramec Corporation.

13. I am familiar with U. S. Patents and have performed a careful review of the STANSBURY APPLICATION and the Furnace Mounting Blocks as exhibited in Exhibit B and set forth in the text and figure 5-10 of the STANSBURY APPLICAATION. As set forth above the undersigned wishes to clarify that the vibration-absorbing pad is now an elastomeric material. It is my opinion that the commercialized Furnace Mounting Blocks and related systems are covered by one or more claims, including at least claims 15-17 and 19-25.
14. The undersigned, being hereby warned that willful false statements or the like so made are punishable by fine or imprisonment or both, under 18 U.S.C. §1001, and that willful false statements may jeopardize the validity of the application or any patent issuing thereon, declares that the facts set forth in this declaration are true, all statement made of his own knowledge are true, and all statements made on information or belief are believed to be true.

Walter R Key
Walter R. Key

2/10/04
Date

FURNACE MOUNT AND METHOD OF INSTALLATION

The present application claims the benefit of United States Provisional Application No. 60/264,955 filed January 30, 2001 and incorporated herein by reference.

BACKGROUND OF THE INVENTION

The present invention relates generally to a method and apparatus for supporting a furnace. More particularly, the present invention has one form wherein a plurality of furnace mounting blocks are adhered to the bottom of the furnace and maintain the furnace in a position off of the floor.

It is well known that furnaces are conventionally utilized to deliver heated air through a furnace duct system to heat registers located throughout the house. The furnaces are generally raised off of the floor to avoid being exposed to moisture and the associated rusting of the furnace cabinet. In one prior technique of raising the furnace off the floor, the installation technicians have utilized masonry blocks which are slid under the furnace and function to raise the furnace above the floor's surface. The prior technique does not provide for any vibration dampening between the furnace cabinet and the masonry block holding the furnace above the floor. Therefore, the vibration and noise is transmitted from the cabinet to the floor. Further, the masonry blocks are physically heavy and do not allow for the sliding into place of the furnace while seated on the masonry blocks.

Heretofore, there has been a need for a lightweight furnace mounting block system for elevating the furnace from the floor and minimizing the transmission of vibration and noise. The

means for satisfying this need has escaped those skilled in the art. The present invention satisfies this need in a novel and unobvious way.

SUMMARY OF THE INVENTION

One form of the present invention contemplates a mount for supporting a furnace above the floor. The mount comprising: a main body member having a first surface adapted to engage the floor and a second surface spaced from the first surface and adapted to support the furnace above the floor; and, an adherent component connected with the main body member and located proximate the second surface, the adherent component including an adhesive surface adapted to engage and couple the main body member with the furnace.

Another form of the present invention contemplates a mount for supporting a furnace above the floor, comprising: a substantially rigid main body member having a first surface adapted to engage the floor and a second surface spaced from the first surface and adapted to support the furnace above the floor; a vibration dampening component positioned on and connected with the second surface, the vibration dampening component having an outer adhesive surface adapted to engage and couple the main body member with the furnace; and, wherein the main body member has a locating portion extending from the second surface to abut an outer surface of the furnace and position the second surface relative to the furnace.

Yet another form of the present invention contemplates a combination, comprising: a furnace; and, a plurality of furnace mounts adapted to hold the furnace above a floor, each of the plurality of mounts comprising: a substantially rigid main body member having a first surface adapted to engage the floor and a second surface spaced from the first surface and adapted to support the furnace above the floor; a vibration dampening component positioned on and connected with the second surface, the vibration dampening component having an outer adhesive surface adapted to engage and couple the main body member with the furnace; and wherein the

main body member has a locating portion extending from the second surface to abut an outer surface of the furnace and position the second surface relative to the furnace.

In yet another form of the present invention there is contemplated a method for supporting a furnace above the floor. The method, comprising: providing a furnace mounting block having an adhesive surface and a locating feature; lifting the furnace to place at least a portion of a bottom surface of the furnace off of the floor; positioning the furnace mounting block adjacent the bottom surface of the furnace and abutting the locating feature against an outer surface of the furnace; and, adhering the adhesive surface to the bottom surface of the furnace.

One object of the present invention is to provide a unique furnace mounting system.

Related objects and advantages of the present invention will be apparent from the following description.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is an end view of a typical furnace positioned on one embodiment of the furnace mounting blocks of the present invention.

Fig. 2 is a side elevational view of the furnace positioned on the furnace mounting blocks of Fig. 1.

Fig. 3 is a side elevational view of a typical furnace positioned on an alternative embodiment of the furnace mounting blocks of the present invention.

Fig. 4 is an enlarged partial view of Fig. 1, comprising the furnace coupled with the furnace mounting blocks.

Fig. 5 is an end view of a typical furnace mounted on another embodiment of the furnace mounting blocks of the present invention.

Fig. 6 is a perspective view of the furnace mounting block comprising a portion of Fig. 5.

Fig. 7 is an enlarged partially fragmented view of Fig. 5 showing the coupling of the furnace mounting block to the furnace.

Fig. 8 is a front elevational view of the furnace mounting block of Fig. 6.

Fig. 9 is a side elevational view of the furnace mounting block of Fig. 6.

Fig. 10 is a top plan view of the furnace mounting block of Fig. 6.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

For the purposes of promoting an understanding of the principles of the invention, reference will now be made to the embodiments illustrated in the drawings and specific language will be used to describe the same. It will nevertheless be understood that no limitation of the scope of the invention is thereby intended, such alterations and further modifications in the illustrated device, and such further applications of the principles of the invention as illustrated therein being contemplated as would normally occur to one skilled in the art to which the invention relates.

With reference to Fig. 1, there is illustrated a front view of a typical upflow furnace 10 located on one embodiment of a furnace installation system 11 of the present invention. The furnace installation system 11 is adapted to elevate the furnace 10 from a floor 12. While the present invention will be described with reference to an upflow furnace, it should be understood by one of ordinary skill in the art that the furnace installation system 11 could be utilized with other types of furnaces and air conditioning equipment.

With reference to Fig. 2, there is illustrated a side view of the furnace 10 positioned on the furnace installation system 11. In one embodiment of the present invention the furnace installation system 11 includes a pair of spaced members 13 that are positioned between the bottom surface 20 of the furnace and the floor 12. With reference to Fig. 3, there is illustrated a side view of the furnace 10 positioned on another embodiment of the furnace installation system 21. The furnace installation system 21 includes a member 14 located proximate each of the four corners of the furnace 10. It is contemplated herein that other embodiments of the furnace installation system can contain other quantities of members having different lengths and geometric configurations.

With reference to Fig. 4, there is illustrated an enlarged end view of one of the members 13 forming a portion of the furnace installation system 11. The furnace installation system will be described with regards to the installation system 11, however it is understood that it is equally applicable to the other systems contemplated herein. The member 13 includes a floor elevation body member portion 15 and an upstanding attachment member portion 16. The floor elevation body member can be formed as a solid member, a hollow member or other forms provided it has the structural integrity to support the load of the furnace. The member 13 can be formed as a fabricated structure from multiple pieces of material or can be integrally formed as one piece. In one form the member 13 is formed by welding a metal floor elevation body member portion to the upstanding metal member attachment portion. However, in another form the member is integrally formed from a metallic material. The present invention further contemplates that the member can be formed of materials other than metal including, but not limited to, composite materials, polymeric materials, synthetic organic materials and/or plastic. In one form the member is integrally formed of a composite material, a polymeric material, a synthetic material and/or a plastic. The upstanding attachment member portion 16 is secured to the outer surface 22 of the furnace 10. In one form the upstanding attachment member portion 16 is secured to the outer surface 22 by an adhesive material 17. In a preferred form, the upstanding attachment member portion 16 is secured to the outer surface 22 by double-sided tape. The adhesive material 17 can extend along the entire length of the attachment member portion 16 or can extend along only a portion of the attachment member portion 16.

The bottom surface 20 of the furnace 10 rests on a vibration dampening pad 19 that is coupled to the floor elevation body member 15. The vibration dampening pad 19 extending substantially along the upper surface 25 of the body member 15 and is adapted to dampen

vibration and noise associated with the furnace 10. In one form, an elastomeric material defines the pad member 19. The elastomeric materials can include, but are not limited to, polymeric materials and rubber.

The furnace installation system is coupled to the furnace 10 with the adhesive material 17 and the furnace cabinet rests upon the vibration dampening pads 19. The coupling of the members 13 to the furnace 10 allows for the alignment and/or movement of the furnace 10 without necessitating the repositioning of the members 13. Therefore, in one form of the present invention the furnace can be moved around to position the furnace without having to reset the members holding the furnace off the floor. The members 13 functioning to hold the furnace off of the floor, the vibration dampening pads cushion the furnace cabinet to enhance noise reduction, and the system allows the furnace to be positioned without having to reposition the members 13.

With reference to Fig. 5, there is illustrated another embodiment of the furnace installation system 110 of the present invention. As previously described for other forms of the present invention the furnace installation system elevates the bottom surface 20 of the furnace 10 from the floor 12. The furnace installation system 110 preferably includes a plurality of furnace mounting blocks 111 positioned between the floor 12 and the bottom surface 20 of the furnace 10. More preferably, the furnace installation system 110 includes one furnace mounting block 111 located at each of the four corners of the furnace 10. However, the present invention contemplates other furnace installation systems including other quantities of furnace mounting blocks 111 and the location and spacing of them around the bottom surface 20 of the furnace.

With reference to Figs. 6-11, there is illustrated one form of the furnace mounting block 111. The furnace mounting block 111 includes a main body member 115 and a surface 116

adapted for abutting the floor and another surface 117 adapted for receiving the furnace 10 thereon. In the present application the surface 117 will be considered to receive the furnace thereon if the furnace directly contacts the surface 117 or if the furnace contacts one or a series of intermediate components/materials/layers that are received on and supported by surface 117. In one form of the present invention the first surface 116 and the second surface 117 are spaced apart at least about 2 inches. However it is understood that the present invention is not limited to surfaces spaced apart by the above dimensions and other spacing are contemplated herein. Further, in one form of the present invention the surfaces 116 and 117 are substantially parallel. However, the surfaces 116 and 117 may be other than parallel and they may be contoured and non-planar to meet the specific requirements of some furnace installations.

The furnace mounting block 111 preferably includes at least one locating portion 120 that is adapted to abut the outer surface 10a of the furnace. The positioning of the locating portion 120 adjacent the outer surface 10a of the furnace 10 causes the surface 117 to be properly located and aligned with the bottom surface 20 of the furnace 10. In one form of the present invention an upstanding member 121 that extends from surface 117 defines the locating portion 120. In a preferred form of the present invention the upstanding member 121 extends substantially perpendicular from the surface 117. In a more preferred form of the present invention the locating portion 120 is defined by a pair of upstanding members 121 that are oriented perpendicular to one another and have bearing surfaces 122 adapted to abut the outer surface 10a of the furnace. The locating portion 120 is designed and constructed to mate with the corner configuration of the furnace. Those of ordinary skill in the art should understand that many furnaces do not have a totally enclosed bottom surface, rather they have a lip formed by the sheet metal furnace cabinet. The sheet metal lip generally extends perpendicular from the outer surface

10a back under the furnace about $\frac{3}{8}$ inches, however other lip sizes are contemplated herein.

The present invention is applicable with all types of furnaces whether they have a total bottom surface or a lip.

In one form of the present invention the furnace mounting block 111 includes an adherent layer/material 125 coupled with at least a portion of surface 117. The adherent layer/material 125 includes an adhesive material on an outer surface that is adapted to stick to the bottom surface 20 of the furnace 10. The adhesive material securely couples the furnace mounting block 111 with the furnace 10. In one form of the present invention the adhesive material is a double backed tape, however other material such as, but not limited to, glue are contemplated herein. In a preferred form of the present invention a layer of material that covers the substantial entire surface 117 defines the adherent layer/material 125.

In a more preferred form of the present invention a vibration dampening material 126 is located on and supported by the surface 117. The vibration dampening material 126 may form a part of the adherent layer/material 125 or be positioned between the surface 117 and the adherent layer 125. The vibration dampening material 117 provides for the dampening of vibration and noise that may be transmitted from the furnace to the furnace mounting block 111. The vibration dampening material functioning to reduce or eliminate the transmission of noise and/or vibration from the furnace. A layer located on the surface 117 preferably defines the vibration dampening material 117 and in one form has a thickness within the range of about $\frac{1}{8}$ to about $\frac{1}{4}$ inches. However, other thicknesses are contemplated herein. Vibration dampening materials suitable for this application include, but are not limited to, an elastomeric material and/or a cork material. A vibration dampening pad having an elastomeric outer layer and a cork inner portion is also contemplated herein. In a preferred form of the present invention the vibration dampening

material is formed of cork. The vibration dampening material is preferably connected to the surface 117 and includes the adherent layer/material 125 on it's outer surface 126a. The adhesive material is preferably applied in a fashion that allows it to be substantially parallel with the surface 117. In one form of the present invention a removable layer (not illustrated) covers the adhesive material and prevents contamination of the adhesive prior to installation.

With reference to Fig. 9, there is illustrated a side view of one form of the furnace mounting block 111. The furnace mounting block 111 in Fig. 9 has the locating portion 120 extending outwardly from the rest of the main body member 115. The present invention contemplates that the locating portion 120 may be configured to have the same width as the main body member 115 and not extend outwardly therefrom. Further, the main body member is contemplated as being formed as an integral component or as a multi-part assembled structure. The main body member is preferably formed as an integral component of materials selected from a group of metals, composite materials, polymeric materials, synthetic materials and/or plastic. Preferably the main body member is formed of a polymeric material, and the material and structure can withstand the static loads associated with supporting a furnace.

The furnace mounting block 111 and furnace installation system has been described with the aid of the figures. A method of installing a furnace on the mounting blocks 111 will now be set forth. The furnace 10 is raised from the floor 20 so that at least a portion of the bottom surface 20 is clear from the floor 12. If the furnace mounting block 111 includes a protective cover over the adhesive material it must be removed before installation. The furnace mounting block with the adhesive exposed is positioned proximate the bottom surface 20 of the furnace 10. The locating portion 120 of the furnace mounting block 111 is brought into an abutting and aligning relationship with the outer surface 10a of the furnace 10. The adhesive surface is

brought into contact with the bottom surface 20 of the furnace and adhered to the furnace. The procedure is repeated for each mounting location for the furnace. In a preferred form of the present invention the locating portion 120 is brought into an abutting relationship with each corner adjacent the bottom surface of the furnace. The furnace 10 is then lowered back onto the floor and can be slid into position as desired.

While the invention has been illustrated and described in detail in the drawings and foregoing description, the same is to be considered as illustrative and not restrictive in character, it being understood that only the preferred embodiment has been shown and described and that all changes and modifications that come within the spirit of the invention are desired to be protected. It should be understood that while the use of the word preferable, preferably or preferred in the description above indicates that the feature so described may be more desirable, it nonetheless may not be necessary and embodiments lacking the same may be contemplated as within the scope of the invention, that scope being defined by the claims that follow. In reading the claims it is intended that when words such as "a," "an," "at least one," "at least a portion" are used there is no intention to limit the claim to only one item unless specifically stated to the contrary in the claim. Further, when the language "at least a portion" and/or "a portion" is used the item may include a portion and/or the entire item unless specifically stated to the contrary.

What is claimed is:

1. A mount for supporting a furnace above the floor, comprising:
a main body member having a first surface adapted to engage the floor and a second surface spaced from said first surface and adapted to support the furnace above the floor; and
an adherent component connected with said main body member and located proximate said second surface, said adherent component including an adhesive surface adapted to engage and couple said main body member with the furnace.
2. The mount of claim 1, wherein said main body member includes a locating portion adapted to abut the furnace and align said second surface under the furnace.
3. The mount of claim 2, wherein said locating portion includes an upstanding member extending substantially perpendicular from said second surface.
4. The mount of claim 2, wherein said adherent component is located on said upstanding member, and which further includes a vibration dampening material located on said second surface and adapted to receive the furnace thereon.
5. The mount of claim 4, wherein said vibration dampening material is defined by an elastomeric material.
6. The mount of claim 4, wherein said vibration dampening material is defined by a cork material.

7. The mount of claim 4, wherein said vibration dampening material is defined by an elastomeric and cork configuration.
8. The mount of claim 1, wherein said adherent component is attached to said second surface, and wherein said adhesive surface is spaced from said second surface.
9. The mount of claim 8, wherein said adhesive surface is substantially parallel with said second surface.
10. The mount of claim 8, wherein said adherent component includes a vibration dampening portion located between said second surface and said adhesive surface.
11. The mount of claim 10, wherein said vibration dampening portion includes an elastomeric material.
12. The mount of claim 10, wherein said vibration dampening portion includes a cork material.
13. The mount of claim 10, wherein said vibration dampening portion includes a vibration dampening pad.
14. The mount of claim 1, wherein said first surface and said second surface are substantially parallel, and wherein said second surface is spaced from said first surface at least about 2 inches.

15. A mount for supporting a furnace above the floor, comprising:

a substantially rigid main body member having a first surface adapted to engage the floor and a second surface spaced from said first surface and adapted to support the furnace above the floor;

a vibration dampening component positioned on and connected with said second surface, said vibration dampening component having an outer adhesive surface adapted to engage and couple said main body member with the furnace; and

wherein said main body member has a locating portion extending from said second surface to abut an outer surface of the furnace and position said second surface relative to the furnace.

16. The mount of claim 15, wherein said locating portion is defined by two upstanding members that are oriented perpendicular to one another, and wherein each of the two upstanding members has a bearing surface adapted to abut the furnace.

17. The mount of claim 15, wherein said vibration dampening component includes an elastomeric material.

18. The mount of claim 15, wherein said vibration dampening component includes a cork material.

19. The mount of claim 15, wherein said main body member supports the furnace about at least 2 inches above the floor.
20. The mount of claim 15, wherein said first and second surfaces are substantially parallel.
21. A combination, comprising:
a furnace; and
a plurality of furnace mounts adapted to hold the furnace above a floor, each of said plurality of mounts comprising:
a substantially rigid main body member having a first surface adapted to engage the floor and a second surface spaced from said first surface and adapted to support the furnace above the floor;
a vibration dampening component positioned on and connected with said second surface, said vibration dampening component having an outer adhesive surface adapted to engage and couple said main body member with the furnace; and
wherein said main body member has a locating portion extending from said second surface to abut an outer surface of the furnace and position said second surface relative to the furnace.
22. The combination of claim 21, wherein said locating portion is configured to engage a corner of the furnace
23. A method for supporting a furnace above the floor, comprising:

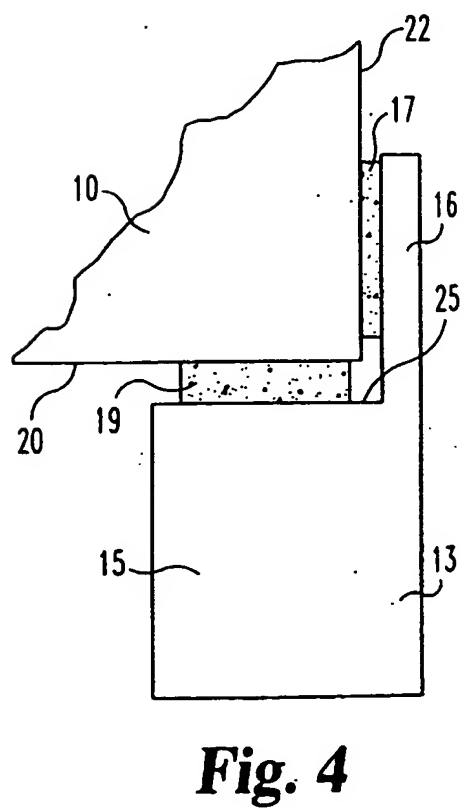
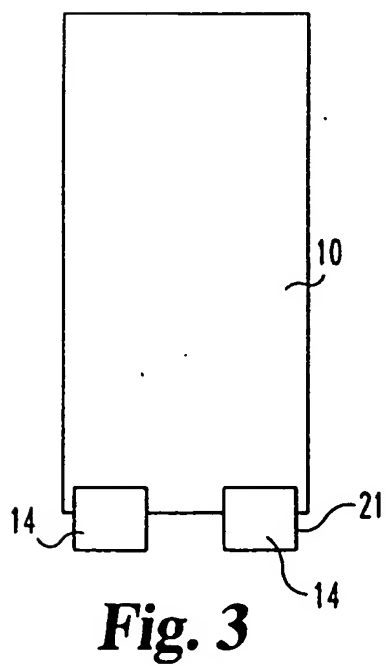
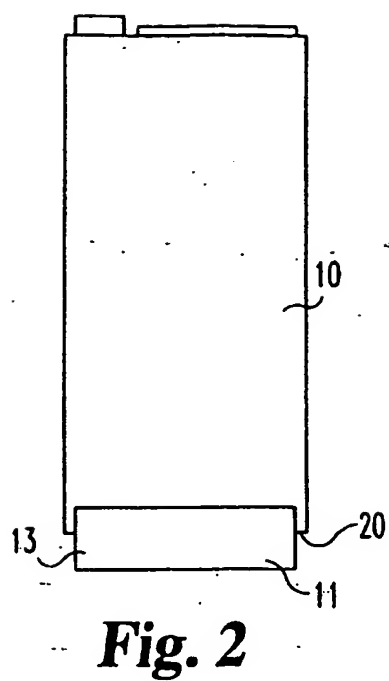
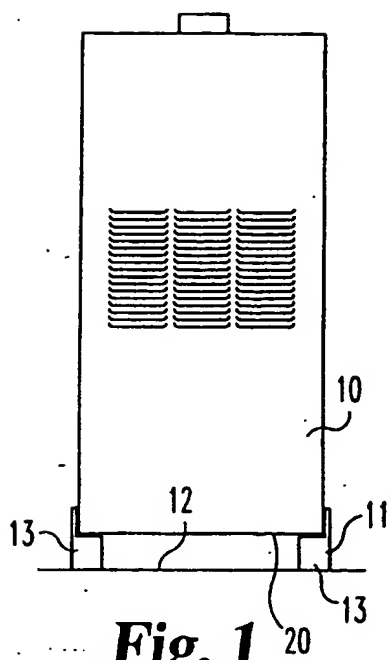
providing a furnace mounting block having an adhesive surface and a locating feature;
lifting the furnace to place at least a portion of a bottom surface of the furnace off of the floor;
positioning the furnace mounting block adjacent the bottom surface of the furnace and abutting the locating feature against an outer surface of the furnace; and
adhering the adhesive surface to the bottom surface of the furnace.

24. The method of claim 23, which further includes providing a plurality of furnace mounting blocks, and which further includes repeating said positioning and said adhering for each corner adjacent the bottom surface of the furnace.

25. The method of claim 24, which further includes sliding the furnace across the floor on the mounting blocks while the mounting blocks are adhered to the bottom surface of the furnace.

ABSTRACT OF THE DISCLOSURE

A furnace mounting system to elevate the furnace above the floor. In one form the furnace mounting system includes a furnace mounting block including a vibration dampening feature to prevent the transmission of noise and vibration from the furnace to the mounting block. The furnace mounting block includes a locating feature and is adhered to the bottom surface of the furnace.



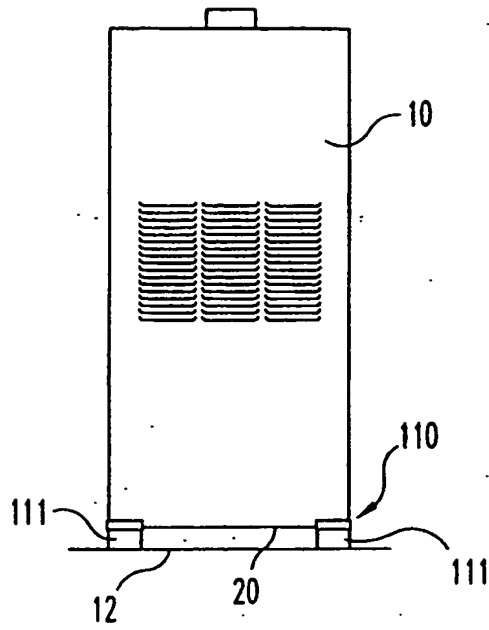


Fig. 5

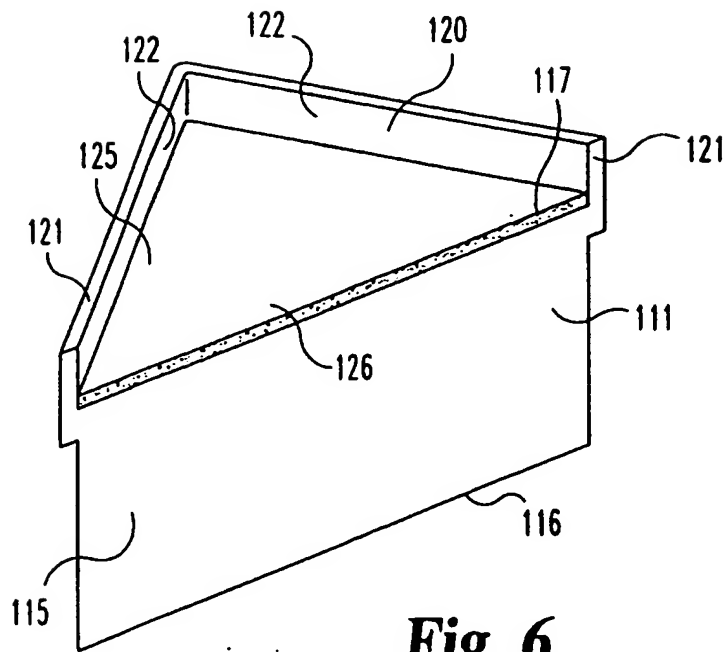


Fig. 6

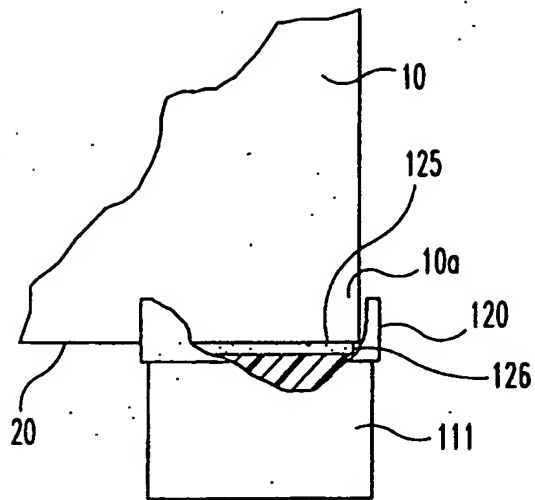


Fig. 7

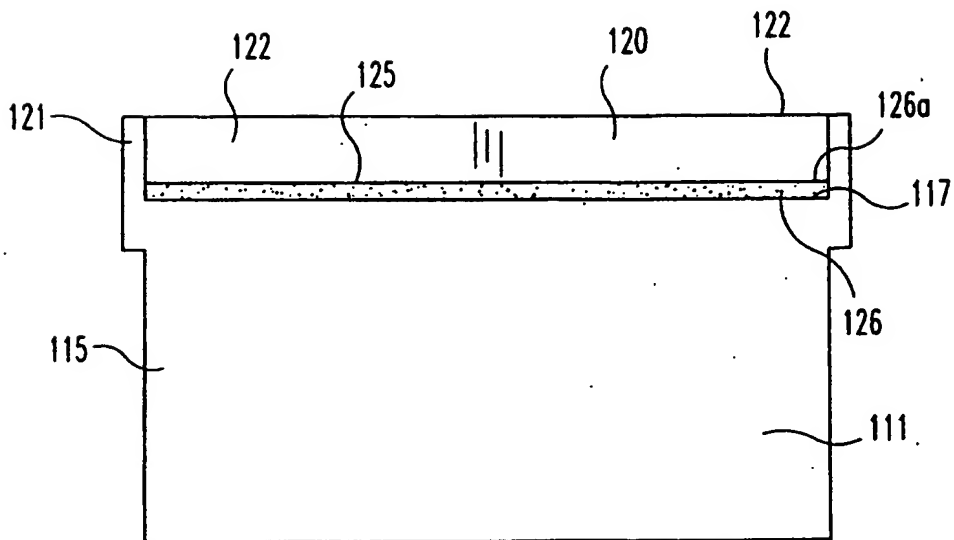


Fig. 8

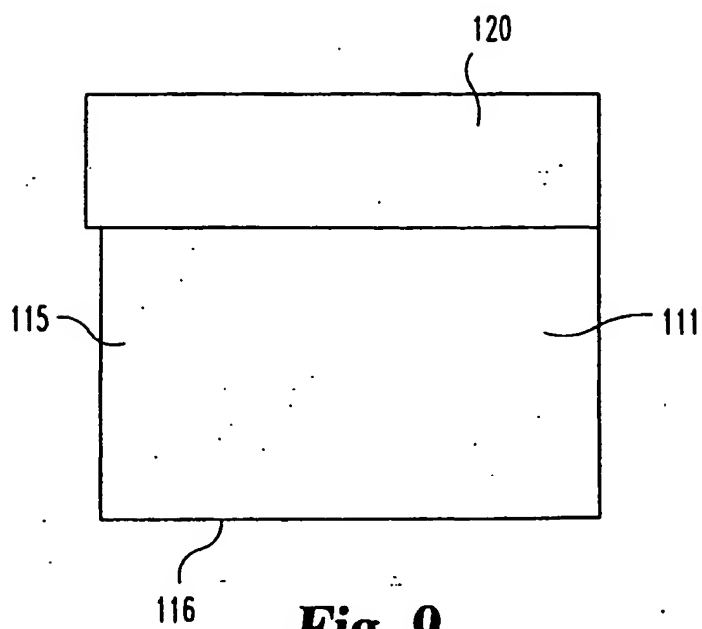


Fig. 9

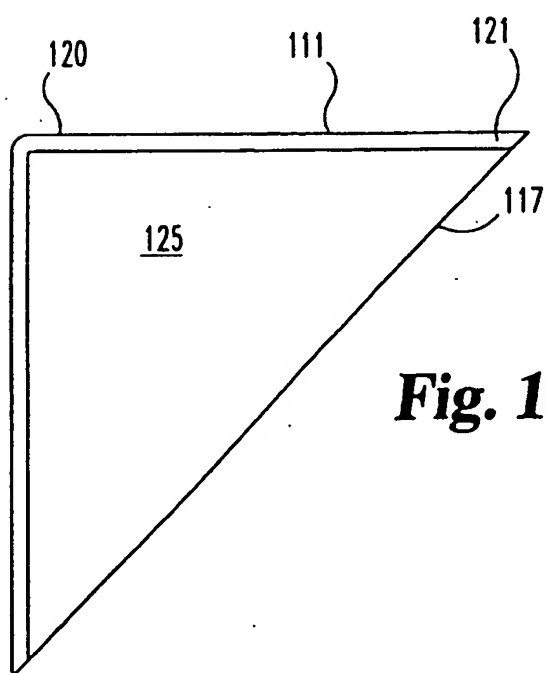


Fig. 10



FURNACE MOUNTING BLOCKS

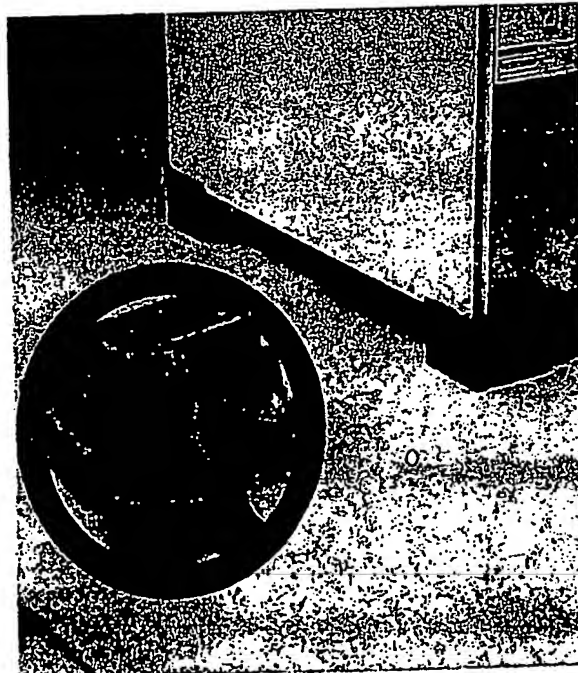
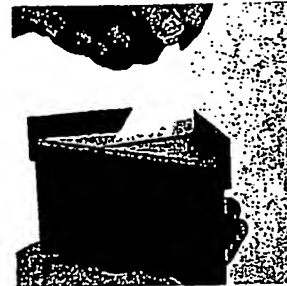
Eliminates Vibration & Noise



Patent
Pending

FEATURES & Benefits:

- Peel & Stick – *EASY INSTALLATION!*
- Vibration Absorbing Cork Pad – *NOISE REDUCTION!*
- 300 lbs per Block Support – *STRENGTH!*
- Holds Furnace off Floor – *Avoids MOISTURE & RUST!*
- Lifetime Guarantee – *DURABLE PLASTIC POLYMER!*
- 4 Mounting Blocks weigh only 1.5 lbs
versus 4 Cinder Blocks @ 24 lbs – *LIGHTWEIGHT!*
- Available at Wholesalers – *SAVES TIME!*
- Won't come off & Easier to install – *SAVES MONEY!*



NSA Products, Inc.
755 East Main Street
Greenwood, Indiana 46143
(317) 865-4140

[54] **ADHESIVE APPLICATOR**

[72] Inventor: Carl E. Smith, Webster, N.Y.

[73] Assignee: Xerox Corporation, Stamford, Conn.

[22] Filed: March 2, 1971

[21] Appl. No.: 120,179

[52] U.S. Cl. 118/50.1, 118/410, 118/429

[51] Int. Cl. B05c 3/12

[58] Field of Search. 118/407, 410, 411, 429, 50,
118/50.1

[56] **References Cited.**

UNITED STATES PATENTS

346,869 8/1886 Sherck et al. 118/411

2,861,899 11/1958 Sylvester et al. 118/407 X
2,878,777 3/1959 Paulsen. 118/407 X

Primary Examiner—John P. McIntosh

Attorney—James J. Ralabate, Norman E. Schrader, Michael J. Colitz and Marn & Jangarathis

[57] **ABSTRACT**

A gas-tight oven containing an adhesive well in external contact with tape to be coated and in internal communication with the oven atmosphere. Heating the oven reduces adhesive viscosity and increases pressure, forcing adhesive into contact with moving tape. Parts requiring frequent cleaning such as doctor blades, adhesive rollers or the like are eliminated. An alternative embodiment utilizes an external source of pressure.

6 Claims, 4 Drawing Figures

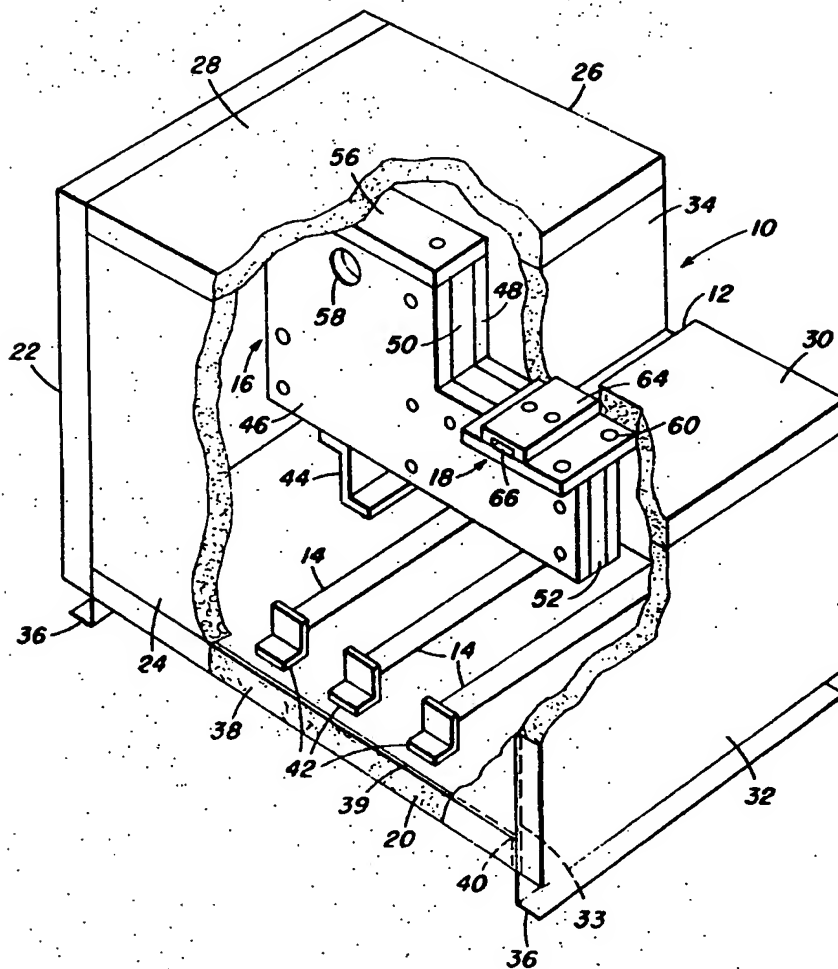


Fig. 3.

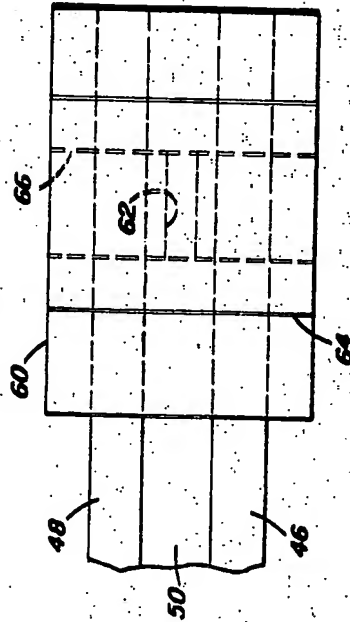


Fig. 2.

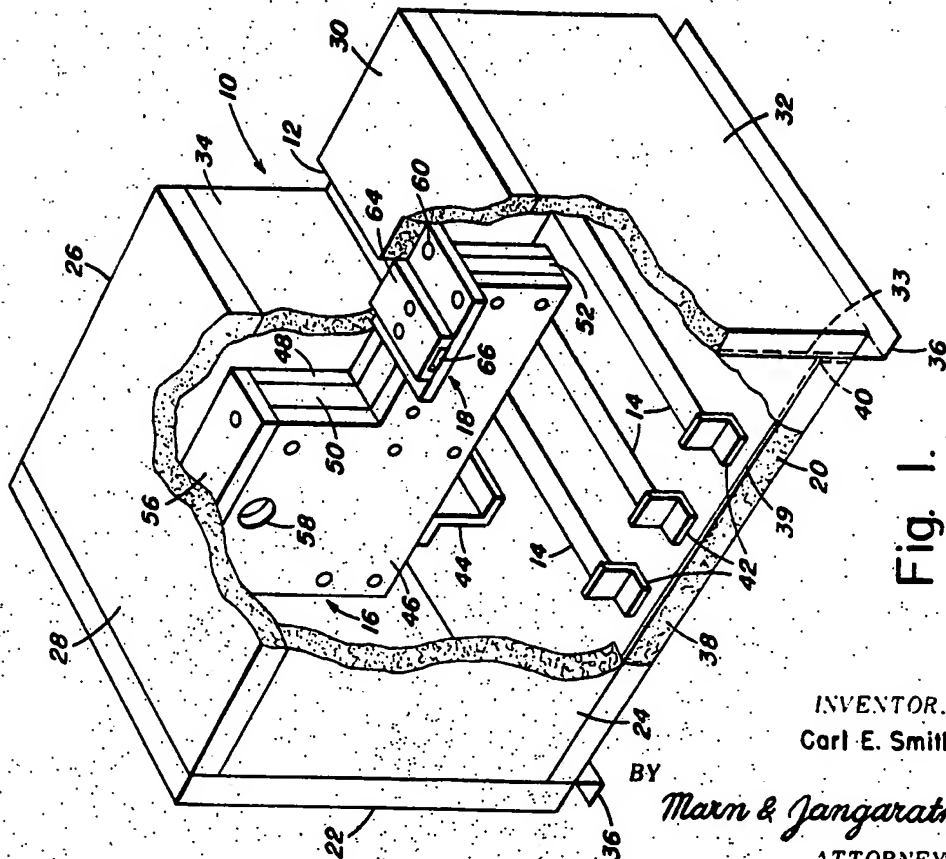
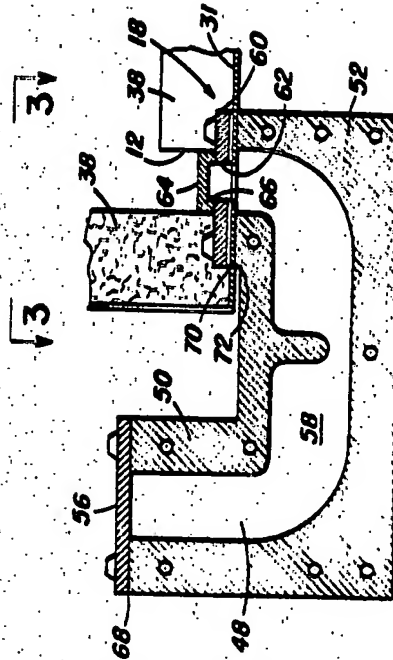


Fig. 1.

INVENTOR.
Carl E. Smith

BY

Marm & Jangarathis
ATTORNEYS

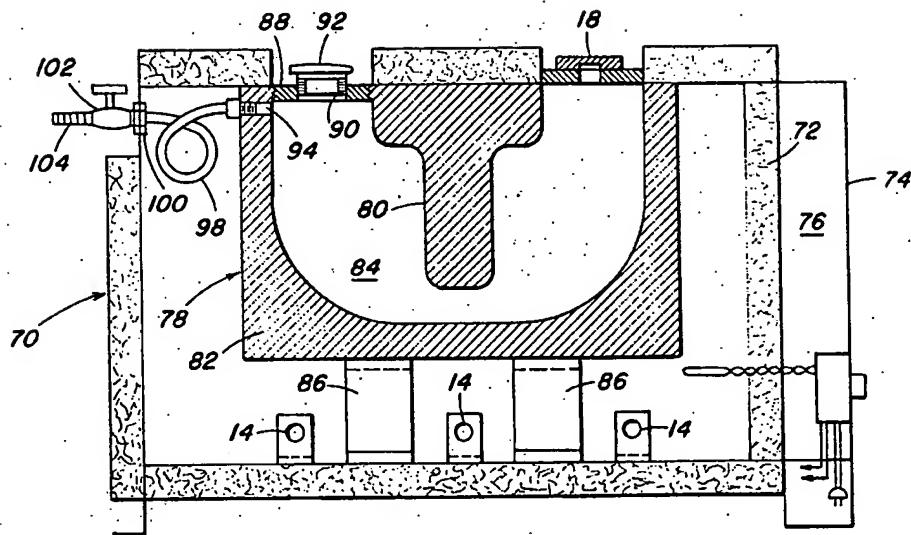


Fig. 4.

INVENTOR.
Carl E. Smith

BY *Marr & Jangarathis*
ATTORNEYS

ADHESIVE APPLICATOR

BACKGROUND OF THE INVENTION

This invention relates generally to applicators of adhesive materials to flexible tape and, more particularly, it relates to a device for applying a liquid adhesive to a flexible tape on a periodic or occasional basis, i.e., an applicator that is not necessarily in continuous or substantially continuous use.

By "flexible tape" is meant any elongated flexible material, such as paper, cloth or plastic film. Such tapes are generally fed from a roll of the material.

Binders of books have used a variety of binding methods for centuries, and many methods involve the use of a flexible tape to which adhesive is applied, after which the tape is applied to the edge surfaces of the collected documents to be bound. Increased book production called for application of adhesive to binding tape at accelerated rates, and devices were developed to accomplish this. Generally, such devices involved a roller which picked up adhesive from a storage reservoir and deposited it on a tape pulled across its upper surface, or a doctor blade which allowed only a uniform coating of adhesive to remain on a tape pulled beneath a storage reservoir. The adhesive and/or roller etc. may be heated to decrease viscosity of the adhesive.

Such devices are satisfactory for more or less continuous use, but rollers, doctor blades and the like must be cleaned whenever use is interrupted, lest adhesive solidify thereon and prevent proper operation.

With the development and widespread use of high-speed xerographic duplicating processes, the binding of collected documents has become a concern of businesses generally, and not just those particularly concerned with producing books. Binding methods used previously by businesses, such as wire staples, ring and spiral binders, cotter clips and the like, become less satisfactory and less economic as the volume of the material to be bound increases, either because they are too expensive or take too much time. Adhesive binding has not found favor because employees with only occasional need for binding find it messy and dislike the clean-up necessary with such devices after each use.

OBJECTS OF THE INVENTION

A general object of the present invention is to provide an adhesive applicator which overcomes the above-noted deficiencies of prior art devices.

Another object of the present invention is to provide an adhesive applicator adapted for convenient intermittent or periodic use.

Still another object of the invention is to provide an adhesive applicator with no moving parts and no parts requiring cleaning.

Various other objects and advantages of the invention will become clear from the following detailed description of a preferred embodiment thereof, and the novel features will be particularly pointed out in connection with the appended claims.

DRAWINGS

An understanding of the invention will be facilitated by reference to the accompanying drawings, wherein like numeral designate like parts:

FIG. 1 is a perspective view of an embodiment of the invention, partially cut-away;

FIG. 2 is a cross-sectional elevation of the adhesive well and tape feeding assemblies of the embodiment of FIG. 1;

FIG. 3 is a plan view, somewhat enlarged, of the tape feeding assembly taken along line III-III of FIG. 2; and

FIG. 4 is a cross-sectional elevation of a modified adhesive well and tape feeding assembly.

DESCRIPTION OF EMBODIMENTS

With reference to FIG. 1, the embodiment illustrated comprises generally an oven enclosure 10, having an exterior transverse channel 12 for passage of flexible tape. The enclosure 10 contains heating elements 14 and an adhesive well assembly, generally indicated as 16. A tape feeding assembly, generally indicated as 18, is located in the transverse channel 12 and communicates with the well assembly 16.

More particularly, enclosure 10 is a closed, insulated structure comprising rectangular bottom 20 and backwall 22; L-shaped sidewalls 24 and 26; a top 28, the front portion 30 of which lies in front of the transverse channel 12 and is recessed; and a front wall 32, the upper portion 34 of which lies above channel 12 and is also recessed or set back to join with top 28. Suitable mounting members 36 are formed integral with the bottom 20 and support the oven 10 above a base surface.

While the particular construction of the oven 10 may be of any suitable form, it is preferred to form the interior walls of sheet metal and to fasten insulation 38 on the exterior portions of the oven 10. This allows for simple construction, as by welding, of gas-tight joints. As shown, the mounting members 36 are integral with the sheet metal oven bottom 20, and the interior portion of sheet metal front wall 32 is joined thereto at 40. To facilitate the introduction of adhesive into the adhesive well assembly 16, the top 28 should be secured by thumb screws or the like, to be easily removable for access to the well assembly 16. Any suitable insulating material may be employed; in the embodiment illustrated rigid polyurethane foam blocks were used.

Heating elements 14 are bolted to bottom 20 with conventional heater standoff brackets 42 at each end and are positioned in the oven 10 beneath the well assembly 16. The heating elements 14 are chosen to be capable of heating the interior of the oven 10 to a suitable temperature, usually about 350° F. In the embodiment shown, three 300-watt Calrod (trade-mark) units were employed in this service. Heating elements 14 are connected to a suitable power source and wired with a suitable variable control (not shown) to enable any desired power (and heating) level to be maintained.

Adhesive well assembly 16 is generally L-shaped and centrally positioned within oven 10. The rear or vertical portion of the "L" is supported from bottom 20 by a support bracket 44 which holds well assembly 16 high enough off the bottom 20 to clear the heating elements 14. The front or horizontal portion of the "L" of well assembly 16 is secured to the underside of recessed top portion 30, as more clearly described below.

In the embodiment illustrated in the drawings, the well assembly 16 comprises five members, but it will be appreciated that the same or equivalent structure can be constructed from as little as two members by employing well-known casting techniques. With reference again to FIG. 1, the well assembly 16 comprises two similar side plates 46 and 48 of a general L-shaped configuration, with a top cavity form 50 and a bottom cavity form 52 secured therebetween, members 46, 48, 50 and 52 jointly defining the adhesive well or cavity, generally indicated as 54, and more fully explained hereinbelow in connection with FIG. 2. A cover plate 56 is secured across the top of the "L" of the well assembly 16 covering the tops of all four members as well as the upper end of the adhesive well 54. Side plates 46 and 48 differ only in that one is provided with an orifice 58 near its upper edge (as shown, in side plate 46) but it will be understood that orifice 58 may be in either side plate, at this location, or in the cover plate 56.

The internal structure of the adhesive well or cavity 54 is best seen in FIG. 2, which is a cross-sectional elevation through the middle of upper and lower cavity forms 50 and 52. The well or cavity 54 may be defined generally as L-shaped but, perhaps more accurately, as U-shaped with one leg (the right leg in the drawing) truncated. The left or higher leg of the adhesive well 54 is closed off by the cover plate 56. The

right or truncated leg of the adhesive well 54 terminates at, but is not closed off by, the tape feeding assembly 18, described hereinbelow. It will be appreciated that orifice 58 (FIG. 1) provides communication between the interior of the oven 10 and the adhesive well 54. The upper surface of lower cavity form 52 defines the lower surface of the adhesive well 54, and the lower surface of the upper cavity form 50 defines the upper surface of the adhesive well 54, upper cavity form 50 being essentially a right-angle plate having rounded corners at the angle and lower extremity.

The tape feeding assembly 18 is mounted externally to the oven 10 over the shorter or truncated leg of the adhesive well 54, on the recessed oven top surface 30 adjacent recessed front wall 34. As seen in FIGS. 2 and 3, the tape feed assembly 18 comprises a lower platen 60, which is merely an apertured plate with the aperture 62 over the open end of the adhesive well 54, and an upper platen 64 having a tape guide channel 66 on the under surface thereof. The channel 66 is parallel to and coaxial with the channel 12, through both of which the tape passes during adhesive coating. The upper platen 64 is secured to the lower platen 60, and the latter is secured to adhesive well assembly 16 through the sheet metal portion 31 of recessed top 30.

As it is important for proper operation that the adhesive well 54 be sealed from any atmosphere except via the orifice 58 and the aperture 62, a gasket 68 is provided beneath cover plate 56, and gaskets 70 and 72 are disposed above and below, respectively, the portion of sheet metal portion 31 of top wall 30 lying between the well assembly 16 and the tape feed assembly 18.

As can be seen from FIGS. 2 and 3, the adhesive well assembly 16 is bolted or screwed together, as is the tape feed assembly 18. If this type of construction is utilized, dowel pins (not shown) may be employed to insure perfect alignment of all parts. However, as noted above, other construction may be employed.

In operation, a viscous adhesive (viscous, that is, at room temperature,) is introduced into the well 54; it is not important whether the cavity is filled; obviously, it can not be filled higher than orifice 58. Cover plate 56 and top 28 are replaced. The machine is now ready for use, though it need not be; since oven 10 is gas-tight, any tendency of the viscous adhesive to flow through orifice 62 is balanced by a drop in pressure above the adhesive under cover plate 54.

While the invention can employ a variety of adhesives, the use of so-called hot-melt adhesives is to be distinctly preferred. Such adhesives can be obtained in granular form and their adhesive properties do not develop until they reach a temperature of about 300° F. Cooling and reheating do not affect these properties, as they are no-solvent adhesives, and they have the further advantage of bonding on contact. Rapid and neat binding of documents is thus facilitated.

When use of the machine is desired, a flexible tape is inserted through the channel 66 in the upper platen 64 and power is turned on, energizing the heating elements 14. As the temperature within the oven 10 rises, the adhesive in well 54 is heated thereby gradually reducing its viscosity. Additionally, the air within the oven 10 becomes heated and, being confined, becomes pressurized in accordance with Charles' law. The thus pressurized air, via orifice 58, forces the adhesive through adhesive well 54 and aperture 62 in lower platen 60. Thus, the heating serves a dual purpose in both reducing the adhesive viscosity and bringing it into contact with the flexible tape.

When adhesive application is completed power to heating elements 14 is turned off and, since such elements cool quickly, heat flow in well assembly 16 reverses, flowing away from the adhesive instead of into it, and as the furnace atmosphere cools it contracts, thereby causing the adhesive to withdraw from the orifice 62. In this manner, the machine may be started and stopped without necessitating the cleaning of parts while simultaneously minimizing spillage. Even when some adhesive does solidify around orifice 62 it is not of con-

cern if hot-melt adhesives are employed, since the solidified material will merely remelt when the machine is turned on again.

Apprehension may arise over the use of a heated, confined gas as the motive force for the invention, but this is considered groundless. Raising the temperature of air in the oven from a nominal 70° F. to 350° F. will cause the pressure to rise to about 24 psi, or about 10 psi over normal atmospheric pressure. However, it will be appreciated that in many installations an external source of pressurized air is readily available, and it may be desired to connect the orifice 58 directly thereto, with a suitable shut-off valve external to the oven. Such an installation is described below with reference to FIG. 4.

An alternate embodiment of the present invention is illustrated in FIG. 4, which is a cross-sectional elevation. In this embodiment, the heating elements 14 and the tape feed assembly 18 are identical with those previously described and will not be discussed further. The oven enclosure, generally indicated as 70, of this embodiment is of the same general type of construction as the embodiment of FIG. 1, but is rectangular rather than L shaped. Further, two front walls 72 and 74 are provided: insulated, inner front wall 72 completes the furnace enclosure, while outer wall 74 forms a control panel, a space 76 therebetween being provided for instrumentation and wiring.

Many high-speed xerographic duplicating machines require compressed air for various functions and all xerography machines which utilize a developer in aerosol form include compressors to supply compressed air. The embodiment of FIG. 4 is designed to take advantage of such a convenient source of compressed air. Thus, instead of an orifice 58 communicating with the oven atmosphere as discussed with reference to FIG. 1, this embodiment includes means for supplying pressurized air from an external source to displace the adhesive. Referring again to FIG. 4, adhesive well assembly 78 comprises an upper cavity form 80 and a lower cavity form 82 which, together with covering end plates, define an adhesive well, generally indicated as 84, which in this embodiment is U-shaped. A pair of support brackets 86 support well assembly 78 above the heating elements 14.

The left leg of the "U" of adhesive well 84, used for filling the well 84 with adhesive, is sealed by a threaded plug 88 having a central aperture 90 therein. The aperture 90 is covered by a cap 92, which may either be simply threaded into the aperture 90, or may be of the pressure-relief type construction commonly used on automobile radiators. In either case, convenient access is provided to cavity 84 for resupply of adhesive materials.

An aperture 94 is provided in lower cavity plate 78 — adjacent plug 88, similar to the aperture 56 in the FIG. 1 embodiment. However, aperture 94 is threaded to receive a fitting 96 which is connected to a flexible copper tube 98. The other end of tube 98 is connected to a fitting 100 mounted in a wall of oven 70. A loop is provided in tube 98 so that thermal expansion thereof will not strain the fittings. Fitting 100 communicate with a stop-cork 102 exterior of oven 70, the stop-cork 102 being provided with a fitting 104 adapted to receive the end of an air hose (not shown).

Wiring of the oven is conventional. Power from a line cord 106 is supplied to a variable transformer 108 which in turn is wired to heating elements 14 via wires 110. A thermocouple 112 inside the oven may be wired into the circuit to maintain a constant temperature in the well known manner.

Operation of this embodiment of the invention is essentially the same as described in reference to the embodiment of FIG. 1, except that stop-cork 102 is opened when it is desired to commence adhesive coating.

Various changes in the details, steps, materials and arrangements of parts, which have been herein described and illustrated in order to explain the nature of the invention, may be made by those skilled in the art within the principle and scope of the invention as described in the appended claims.

What is claimed is:

1. An adhesive applicator comprising:

an insulated oven structure;
a single aperture in a horizontal surface of said oven structure adapted for adhesive flow, said oven being gas-tight except for said aperture;
electric heating means within said oven;
an adhesive storage well within said oven and in communication with said single aperture from beneath same; and pressure means capable of forcing adhesive in said well through said aperture.

2. The adhesive applicator as claimed in claim 1, wherein said well also communicates with means for filling said well with adhesive, said filling means being spaced from said aperture and communicating with said aperture only through said well.

3. The adhesive applicator as claimed in claim 2, wherein said pressure means comprises an orifice in said storage well adjacent said filling means above adhesive in said well, said orifice providing communication between the atmosphere in said oven and said well, said atmosphere during operation

being heated and pressurized by said heating means.

4. The adhesive applicator as claimed in claim 2, wherein said pressure means comprises conduit means in communication with said well adjacent said filling means and above adhesive in said well, and also in communication with a source of pressurized fluid external to said oven.

5. The adhesive applicator as claimed in claim 2, wherein said storage well is generally U-shaped, with said filling means being located over one leg and said aperture being located over the other leg.

6. The adhesive applicator as claimed in claim 1, wherein said aperture is located in a lower platen, and additionally comprising an upper platen secured over said lower platen, over said aperture, said upper platen having a channel therethrough, whereby elongated material can be moved through said channel and over said aperture for adhesive coating.

* * * * *

20

25

30

35

40

45

50

55

60

65

70

75

[54] **SANITARY DISPOSABLE HOLDER FOR ARTICLES OF PERSONAL HYGIENE**

[76] Inventor: **William H. Canham**, 4836 Agnes Ave., North Hollywood, Calif. 91607

[22] Filed: **Sept. 8, 1972**

[21] Appl. No.: **287,554**

[52] U.S. Cl.: **211/65, 248/110, 248/205 A**

[51] Int. Cl.: **A47k 1/09, A47b 81/02**

[58] Field of Search: **211/65, 67, 39 US, 63 US, 211/90; 312/207; 248/110, 111; 108/16; 206/15.1 C, 56 AB**

[56] References Cited

UNITED STATES PATENTS

1,566,193	12/1925	Foster	312/207 UX
749,493	1/1904	Mason	211/65
1,206,321	11/1916	Hammesfahr	211/65

3,108,695	10/1963	Morris	211/65
895,527	8/1908	Williams	206/56 AB
1,782,074	11/1928	Pullen	206/56 AB
1,972,532	9/1934	McMillan	211/65 UX

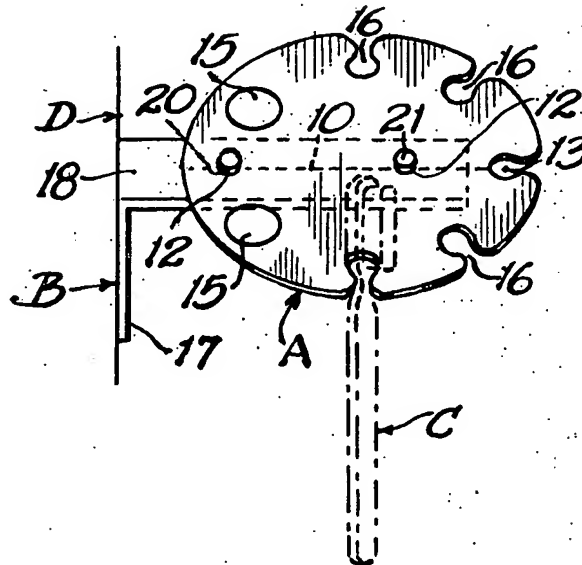
Primary Examiner—Roy D. Frazier

Assistant Examiner—Abraham Frankel

[57] ABSTRACT

A holder for toothbrush and other toilet or personal articles for use in a motel or hotel room or in a home guest room, comprises a wall bracket having a pair of holder studs; and a disposable sanitized holder disc having a pair of apertures to receive the studs with a force-fit and having peripheral slots and/or openings to receive the toilet articles; the disc being scored or otherwise weakened along a diameter intersecting the attachment apertures, such that the disc can be readily broken in halves for quick removal from the holder studs. The disc is replaced by a fresh, sanitized holder disc for the next guest to occupy the room.

10 Claims, 6 Drawing Figures



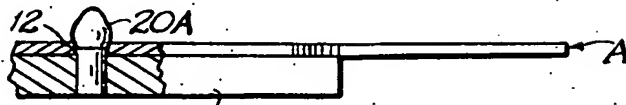


FIG. 5

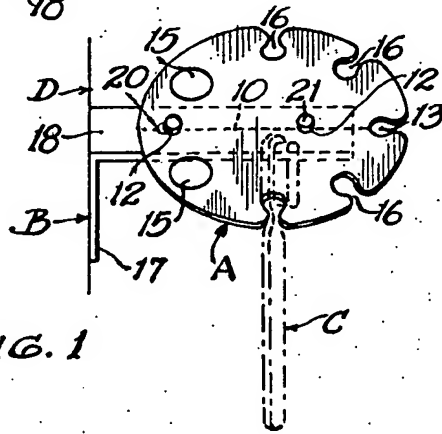


FIG. 1

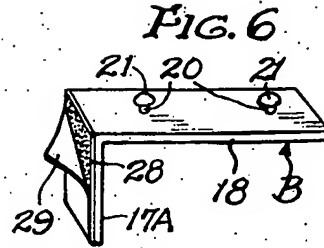


FIG. 6

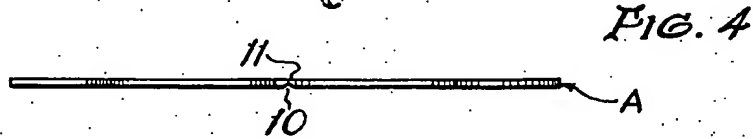


FIG. 4

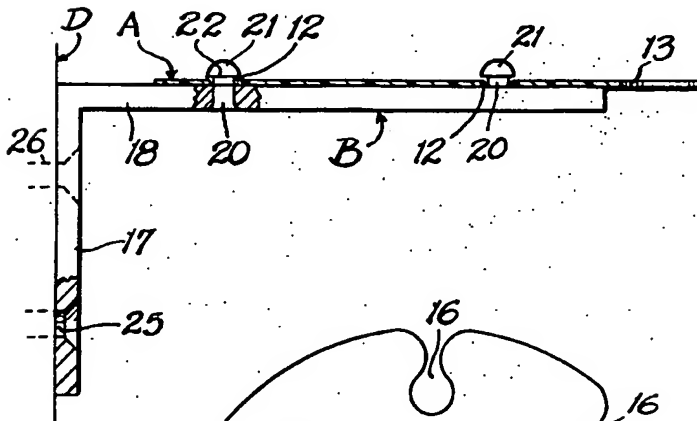


FIG. 3

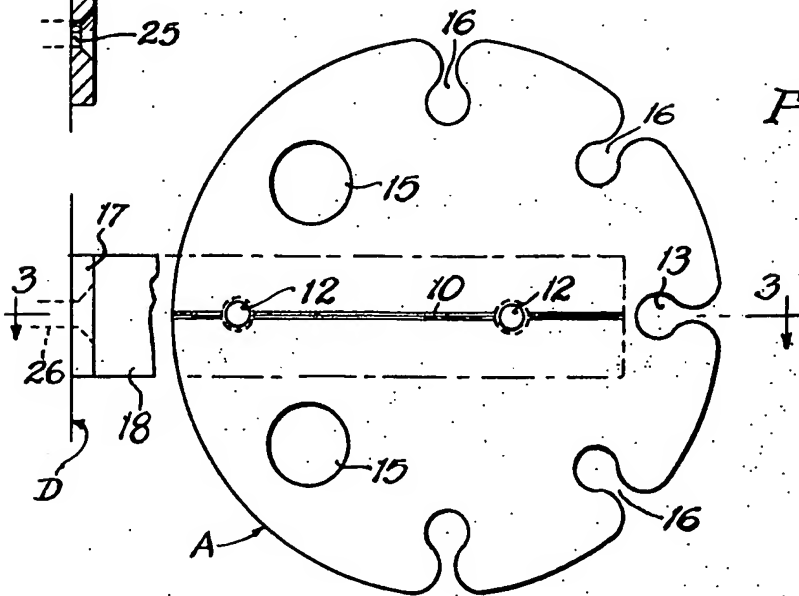


FIG. 2

SANITARY DISPOSABLE HOLDER FOR ARTICLES OF PERSONAL HYGIENE

BACKGROUND OF THE INVENTION

A number of prior proposals for sanitary disposable holders for tooth brushes and the like, have been made over a number of years past, although I am not aware of any of them that have become available for sale and use. Such prior proposals are disclosed in the following patents:

Morris, 3,108,695, Oct. 29, 1963

Heisser, 3,002,630, Oct. 3, 1961

Elliott, 2,916,154, Dec. 8, 1959

Elliott, 2,916,155, Dec. 8, 1959

Holders for toothbrushes and other articles, utilizing an apertured disc mounted on a bracket, are disclosed in the following prior patents:

Merendino, 2,956,851, Oct. 18, 1960

Hammesfahr, 1,206,321, Nov. 28, 1916

Weitermann, 2,925,915, Feb. 23, 1960

SUMMARY OF THE INVENTION

The present invention provides a toilet article holder embodying a permanent wall bracket having a flat horizontal arm with upwardly projecting headed studs, and a disposable disc with article-receiving openings and/or peripheral slots, adapted to rest on the flat upper face of the bracket arm and to be secured by the headed studs, forced through a pair of registering apertures on a weakened diameter of the disc. A fresh, sanitized holder disc is provided for each new guest in a motel or hotel room or other guest room, and when the guests leaves, the disc is removed by breaking it into two halves along the weakened diameter. A fresh holder disc is then attached to the bracket by forcing it down over the holder studs after registering the studs with the holder apertures.

The general object of the invention is to provide such a holder apparatus, of relatively simple and inexpensive construction. Other objects are:

To provide a bracket and holder disc combination in which the holder disc can be quickly attached to the bracket and quickly removed therefrom.

To provide such a combination in which the holder discs can be fabricated cheaply in quantity by a simple die-blanking operation, from thin plastic sheet material or equivalent.

These and other objects will become apparent in the ensuing specification and appended drawing, in which:

FIG. 1 is a perspective view of a holder bracket and disc combination embodying the invention;

FIG. 2 is an inverted plan view of the same, the bracket arm being largely broken away and shown in phantom to show the weakening score line on the under surface of the disposable disc;

FIG. 3 is a sectional view of the same, taken on line 3-3 of FIG. 2;

FIG. 4 is a front edge view of the same, viewed along the weakened breakaway axis;

FIG. 5 is a fragmentary view, partially in section, of a modified form of attachment stud; and

FIG. 6 is a perspective view of a modified form of the holder bracket.

DETAILED DESCRIPTION

Referring now to the drawing in detail, I have shown in FIGS. 1-4 thereof, as an example of one form in

which the invention can be embodied, a holder combination including a disposable holder disc A mounted on a wall bracket B in a horizontal plane, and adapted to support a number of toilet or other personal articles such as a toothbrush C.

Holder disc A is of thin brittle, stiff material such as hard plastic sheet material such as can rapidly be shaped by punching in a blanking die. It has in its under surface a score line 10 providing a weakened web 11 connecting a pair of semi-circular halves along a diameter axis of the disc. On this axis are a pair of attachment apertures 12 and, in the front area of the disc, a holder slot 13. The alignment of apertures 12 and slot 13 on the disc diameter, adds to the weakening effect. Although this effect could be heightened by additional openings along the breakaway axis, in the absence of the score line, the fracture might not bisect the apertures 12 in all instances. Accordingly, the score line will function to direct the fracture through the apertures.

The apertures 12 are eccentrically arranged with reference to the center of the disc A, being disposed away from the slot 13 toward the back of the disc. In each half of the disc are a plurality of holder openings which may include a hole 15 and one or more peripheral slots 16 similar to slot 13.

Bracket B comprises a leg 17 attachable to a wall or other vertical support D in a vertical position, and an arm 18 projecting horizontally from the leg as thus attached. Anchored in the arm 18 and projecting upwardly from the horizontal upper face thereof, are a pair of headed studs 20 having respective heads 21 of semispherical or conical form, slightly larger in diameter than the apertures 12 and spaced to register therewith. Heads 21 have flat shoulders 22 on their undersides, spaced above the upper surface of arm 18 a distance slightly greater than the thickness of disc A, so that the edge portions of the disc surrounding the apertures can snap beneath the shoulders 22 after forcing the disc downwardly over the heads 21. The disc A, when thus forced over the stud heads, will lie flatly on the upper surface of arm 18, resting thereon and held by studs 20 in coupled attachment to arm 18 such as to prevent tipping under the weight of an article hanging from it in an eccentric position, not balanced by an equal weight on the opposite side of the disc, as suggested in FIG. 1. The coupled attachment also prevents accidental removal of the disc A from holder B when articles are being inserted into or removed from the holder.

When the disc A is to be removed after its use by a guest has been completed, the maid or other attendant grasps the two sides of the disc at right angles to the score line 10, and bends the two halves of the disc upwardly until the disc breaks in two at the score line. The two halves are then discarded and a new disc is installed as described above.

For attachment of the leg 17 to a vertical support D, it may be provided with a pair of apertures 25 to receive screws or other fasteners 26, fastened into the wall. As an alternative mounting means (FIG. 6), the bracket leg 17A without fastener apertures, may be provided with a back coating 28 of highly adhesive material, covered with a protective film or sheet 29 until ready for use, when the sheet 29 is stripped off and the exposed adhesive is pressed firmly against the support D.

FIG. 5 illustrates how, instead of the headed studs 20, the studs 20A of bulb shape, may have a tight, frictional, interference fit in attachment apertures 12, such as to provide a coupled attachment of the disc to arm 18 adequate to secure the disc against tipping under the weight of an article hanging from one side of the disc. For example, the diameter of head 20A at its rounded point may be 3/16 inch, enlarging to 9/32 inch at its maximum diameter, and decreasing to 1/4 at its base, for reception in a 1/4 hole 12 in disc A.

The projecting peripheral portions of disc A, sanitized before mounting it on bracket B, will provide sanitary support for articles of personal hygiene such as a toothbrush, free of contact with any contaminated surfaces. Preferably, the discs A are provided to guests in sanitary sealed envelopes from which the guests can remove them and attach them to bracket B.

Disc A is designed so that no part of the disc or the suspended articles can come into contact with vertical support surface D, and the suspended articles cannot contact bracket B. Bracket B is functionally designed for easy cleaning or sanitizing when the disc A is removed.

I claim:

1. Sanitary article holding apparatus comprising:
 - a bracket including mounting means;
 - a flat support arm projecting therefrom in a substantially horizontal position in the mounted position thereof,
 - and a pair of attachment studs secured to said arm in spaced relation and projecting upwardly therefrom;
 - and a disposable sanitary holder disc of thin stiff sheet material having a pair of attachment apertures spaced so as to register with said studs, whereby said studs are receivable therein, said studs having enlarged portions intermediate their upper and lower ends, of slightly larger diameter than said apertures, such as to require pressure on said disc to force the edges of said apertures over said enlarged portions with a coupling action such as to secure said disc in supported relation on said arm with a portion of the disc projecting beyond the arm,
 - said projecting disc portion having an opening to receive and provide sanitary support for an article of personal hygiene.
2. Article holder apparatus as defined in claim 1:
 - said attachment apertures being located on a diameter of said disc so that said projecting portion will be duplicated in opposite sides of the disc projecting laterally from respective sides of said arm,
 - said opposite sides of the disc each having at least one of said article-support openings.
3. Article holder apparatus as defined in claim 1:
 - said disc being of brittle material and weakened

along the common axis of said attachment apertures, whereby it can be readily broken into halves along said axis so as to release it from its coupled attachment to said studs.

4. Article holder apparatus as defined in claim 3:
 - said disc having a plurality of said article-support openings, one of which is an open slot in a peripheral portion of said disc projecting beyond the end of said arm,

said slot being disposed on said common axis of attachment apertures and cooperating therewith to weaken the disc along said axis.

5. Article holder apparatus as defined in claim 3:
 - said disc having a plurality of said article-supporting openings, some of which are open slots in peripheral portions of said disc projecting beyond the sides of said arm,

others of said openings being holes spaced inwardly from said periphery portions and outwardly of respective sides of said arm.

6. Article holder apparatus as defined in claim 1:
 - said disc having a score line traversing it along a diameter thereof which intersects both of said attachment apertures, said score line defining a weakened web joining two halves of the disc which can be broken apart along said score line to release the disc from its coupled attachment to said studs.

7. Article holder apparatus as defined in claim 1:
 - said studs having enlarged heads adapted to be forced through said attachment apertures with an interference fit, and said heads having therebeneath annular shoulders spaced above said arm's upper surface so as to engage the upper surface of said disc to hold the disc against the upper surface of the arm, thereby securing it against tipping under the weight of an article supported by one side of the disc.

8. Article holder apparatus as defined in claim 7:
 - said disc being of brittle material and weakened along the common axis of said attachment apertures to facilitate breaking the disc into halves along said axis, for ready removal of the disc from its coupled attachment to said studs.

9. Article holding apparatus as defined in claim 1:
 - said studs being of bulb shape, such as to have a tight, frictional interference fit in said attachment apertures to secure the disc against the upper surface of the arm so as to prevent tipping under the weight of an article supported by one side of the disc.

10. Article holder apparatus as defined in claim 9:
 - said disc being of brittle material and weakened by a score line along the common axis of said attachment apertures to facilitate breaking the disc into halves along said axis, the halves being readily removable from said studs.

* * * * *



US005557824A

United States Patent [19]
Bushey

[11] **Patent Number:** **5,557,824**
[45] **Date of Patent:** **Sep. 24, 1996**

[54] **FURNITURE FLOOR GLIDE**

[76] **Inventor:** **Richard D. Bushey, 3521 16th Ave.,
Kenosha, Wis. 53140**

[21] **Appl. No.:** **494,696**

[22] **Filed:** **Jun. 26, 1995**

[51] **Int. Cl.⁶** **A47B 91/06**

[52] **U.S. Cl.** **16/42 R**

[58] **Field of Search** **16/42 R, 42 T**

[56] **References Cited**

U.S. PATENT DOCUMENTS

1,069,141	8/1913	Jones .	
1,982,138	11/1934	Herold	45/137
2,644,978	7/1953	Becker	16/42 T
2,717,410	9/1955	Holloman	16/29
2,787,085	4/1957	Auer	45/137
2,886,918	5/1959	Bayley et al.	16/42 R
2,996,753	8/1961	Kramcsak, Jr.	16/42
3,126,666	3/1964	Petersen	45/137
3,177,518	4/1965	Bergstrom	16/42

3,183,545	5/1965	Bergstrom	16/42 R
3,326,508	6/1967	Born	248/346.1
3,623,184	11/1971	Mazur	16/42 R
4,124,917	11/1978	Gilliland	16/42 R
5,081,740	1/1992	Smith	16/42 R
5,220,705	6/1993	Bushey	16/42 R

Primary Examiner—M. Rachuba

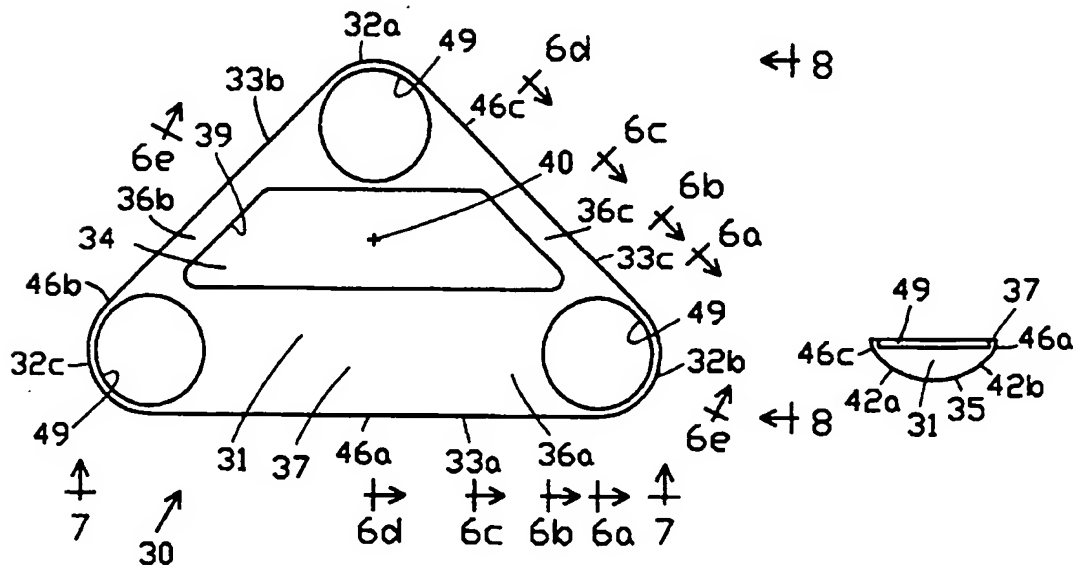
Assistant Examiner—Donald M. Gurley

Attorney, Agent, or Firm—John C. Shepard

[57] **ABSTRACT**

A floor glide for furniture and the like includes a monobloc having a relatively arcuate convex lower surface for contact with the floor and a flat upper surface for supporting furniture, and adhesive means for securing the monobloc to the bottom of furniture. The monobloc is relatively thick and defines recesses for locating resilient adhesive pieces. The monobloc may have webs or ribs for structural rigidity defining one or more cavities in the upper surface to minimize material use. The glide permits furniture to be moved easily along the surface of a floor or floor covering.

18 Claims, 4 Drawing Sheets



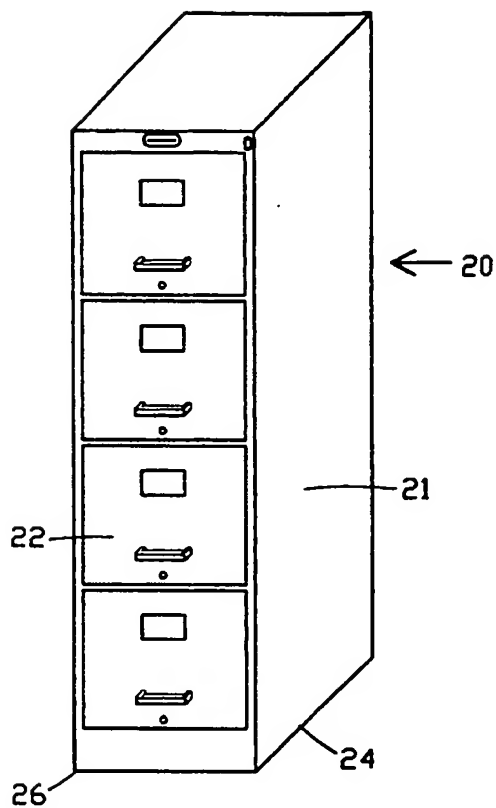


FIG. 1

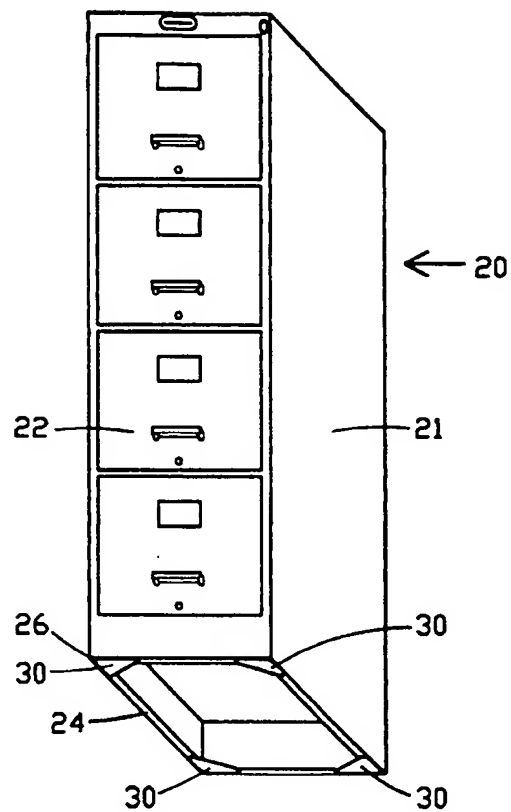


FIG. 2

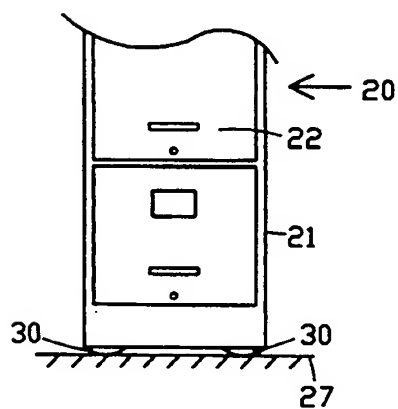


FIG. 3

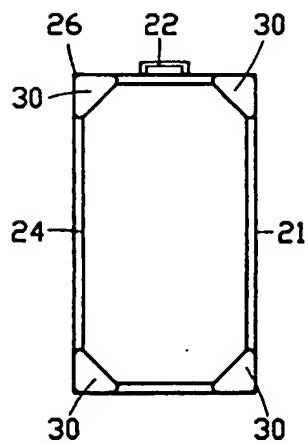


FIG. 4

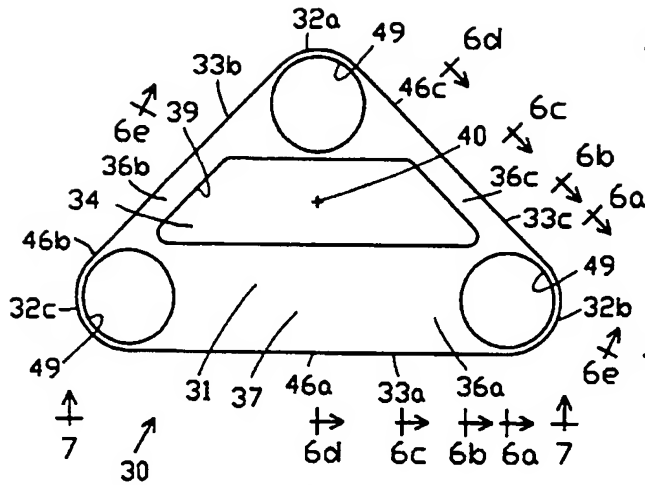


FIG. 5

← 8

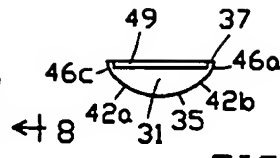


FIG. 6a

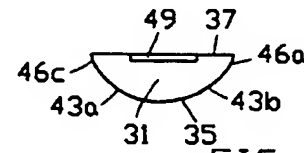


FIG. 6b

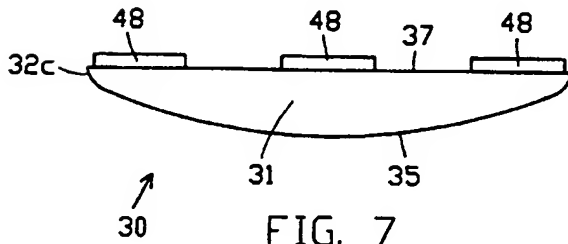


FIG. 7

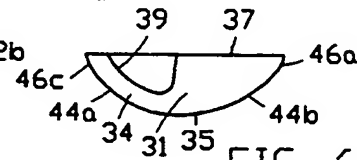


FIG. 6c

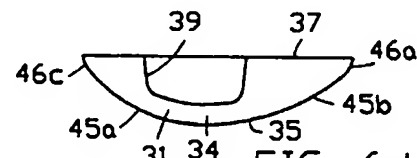


FIG. 6d

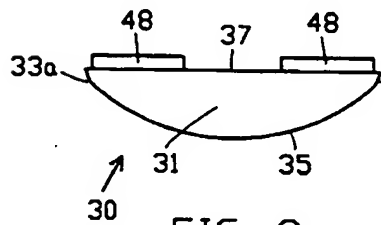


FIG. 8

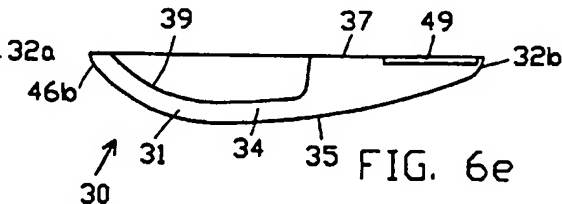
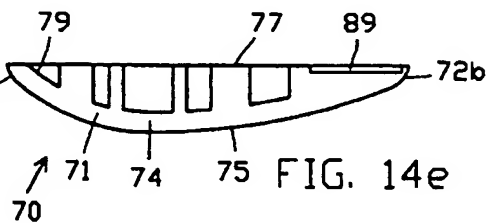
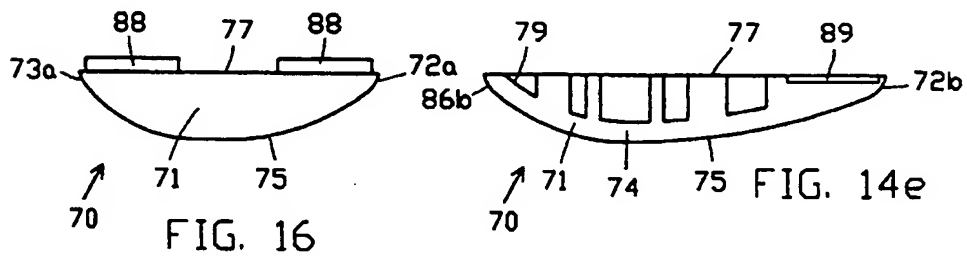
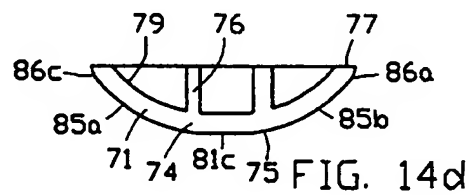
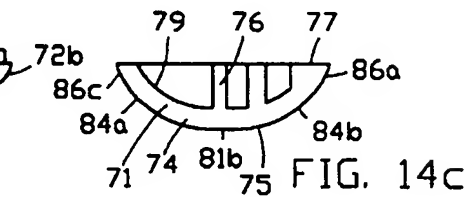
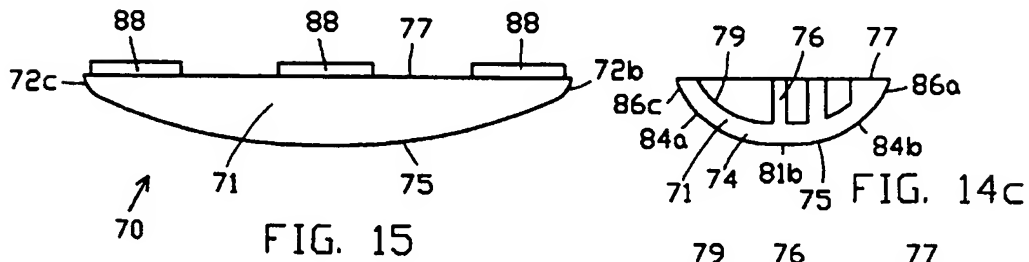
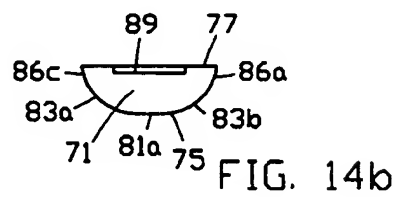
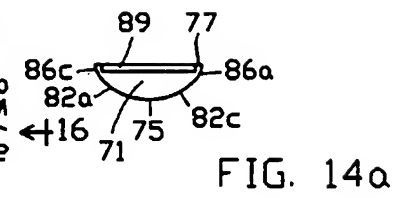
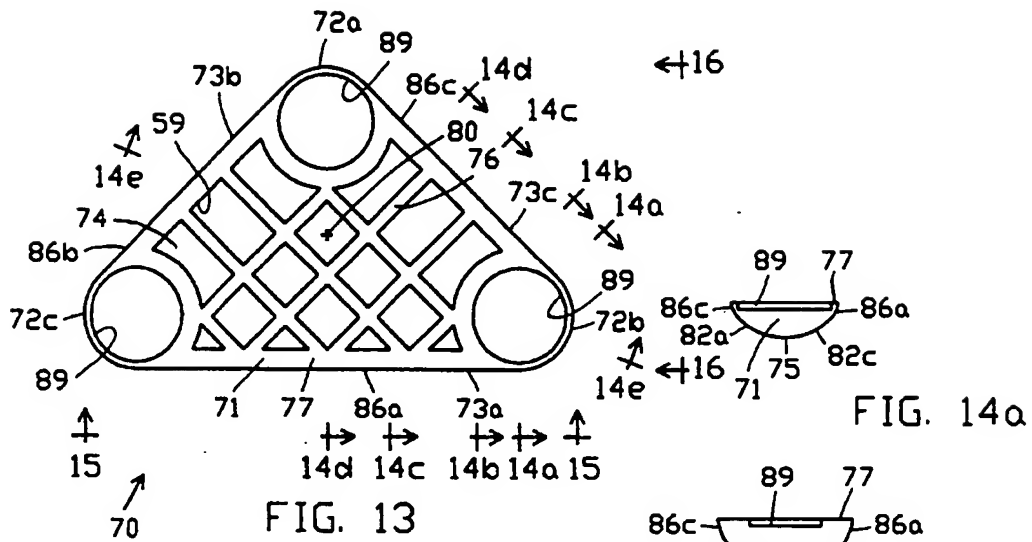


FIG. 6e



FURNITURE FLOOR GLIDE

BACKGROUND OF THE INVENTION

1. Technical Field

This invention relates generally to hardware and, more particularly, to a floor glide for furniture.

2. Background Art

In the prior art, coasters and glides for furniture legs are quite common. Coasters, also known as caster cups or furniture shoes, are typically glass, plastic, or rubber disks which are placed under the leg bottom. The coasters usually have a flat bottom so as to rest flat on the floor. The coasters act as a buffer between the legs, which are usually, small and sharp-edged, and the floor and distribute the weight of the leg over a larger area. As a result, floors and floor coverings are protected against marring, scratches, marks, dents and the like.

Glides made from plastic, such as nylon and polyethylene, or rubber or steel are applied directly to the end of furniture legs, or on the bottom edges of sides of desks or dressers, or to the bottom surfaces of file cabinets or bookcases. Typically, glides are relatively small, the size of a chair leg, and have a flat bottom. They are attached by screws, threaded stems, nails, or by press fitting the glides around the outside of legs or within the open end of hollow legs. Coasters and glides found in the prior art are not easily attached and do not permit heavier furniture to be moved readily or easily.

SUMMARY OF THE INVENTION

The present invention is directed to overcoming one or more of the problems as set forth above.

According to the present invention, a glide providing easier movement of furniture on carpeted and bare floors includes a relatively thick monobloc having an arcuate lower surface and a flat upper surface and adhesive means for securing the monobloc to the bottom of furniture.

In an exemplary embodiment of the glide, the monobloc is triangularly-shaped for use in the corners of furniture pieces and separate pieces of adhesive are used adjacent the three corners of the monobloc to secure the glide to the furniture bottom.

In one exemplary embodiment of the invention, the lower surface of a triangularly-shaped glide is defined by a series of arcs extending from the bottom of the glide upwardly towards the peripheral edges of the glide. The thickest part of the glide, i.e., the lowermost portion, is located toward the right-angle corner of the glide and spaced from the long edge, whereby the corner of the furniture is more closely located over the glide's floor contact point.

A feature of the invention is that the adhesive is carried by resilient material positioned within recesses defined in the upper surface of the monobloc so that the adhesive material when pressed into the recesses secures the monobloc. The furniture rests on the flat upper surface of the monobloc and not on the adhesive material which is not completely crushed by the weight of the furniture.

To reduce material cost, a glide may be constructed with a single large cavity defined by a peripheral web. The glide may have a series interconnecting structural webs defining multiple small cavities. The webs surrounding the single or multiple cavities support the furniture and prevent the monobloc from deforming or flattening out.

A further feature of the invention is that the peripheral sides are defined by a relatively small radius arc providing a draft angle for mold release during injection molding and the remainder of the lower surface is primarily defined by large radius arcs providing a low friction contact surface for sliding movement along the floor.

In another embodiment of the invention, the lower surface of the glide has a relatively thin flat area between the arcs which extend to opposite peripheral edges.

An advantage of the invention is that the contact surface of the glide is smooth with no abrupt angles or edges since the lower surface has curves blended into one another. Thus, the glide does not "dig" into the floor or "plow" when furniture is moved along the floor. The glide disperses the weight of the furniture piece over a large contact area thereby reducing the weight per square inch of contact. This combination of a relatively large, smooth, contoured contact surface reduces wear and the force or thrust required to move furniture across a floor.

Another advantage of the invention is that the thick glide can be used with furniture placed on carpeted floors, since the glide raises the furniture off the floor, or on hard floors, such as wood, linoleum or a no-wax floor or concrete, since the glide is rigid and lubric.

BRIEF DESCRIPTION OF THE DRAWINGS

The details of construction and operation of the invention are more fully described with reference to the accompanying drawings which form a part hereof and in which like reference numerals refer to like parts throughout.

In the drawings:

FIG. 1 is a front perspective view of a conventional file cabinet;

FIG. 2 is a bottom perspective view of the file cabinet showing the glides of the present invention in place at the four corners of the file cabinet;

FIG. 3 is a partial front view of the file cabinet on the floor showing the glides of the present invention in place;

FIG. 4 is a bottom elevational view of the file cabinet showing the glides of the present invention in place at the four corners of the file cabinet;

FIG. 5 is a top elevational view of a glide constructed in accordance with the present invention;

FIG. 6a is a cross-sectional view of the glide taken along line 6a—6a of FIG. 5;

FIG. 6b is a cross-sectional view of the glide taken along line 6b—6b of FIG. 5;

FIG. 6c is a cross-sectional view of the glide taken along line 6c—6c of FIG. 5;

FIG. 6d is a cross-sectional view of the glide taken along line 6d—6d of FIG. 5;

FIG. 6e is a cross-sectional view of the glide taken along line 6e—6e of FIG. 5;

FIG. 7 is a front elevational view of the glide taken along line 7—7 of FIG. 5 shown with the adhesive disks in place;

FIG. 8 is a side elevational view of the glide taken along line 8—8 of FIG. 5 shown with the adhesive disks in place;

FIG. 9 is a top elevational view of a second embodiment of a glide constructed in accordance with the present invention;

FIG. 10a is a cross-sectional view of the glide taken along line 10a—10a of FIG. 9;

FIG. 10b is a cross-sectional view of the glide taken along line 10b—10b of FIG. 9;

FIG. 10c is a cross-sectional view of the glide taken along line 10c—10c of FIG. 9;

FIG. 10d is a cross-sectional view of the glide taken along line 10d—10d of FIG. 9;

FIG. 10e is a cross-sectional view of the glide taken along line 10e—10e of FIG. 9;

FIG. 11 is a front elevational view of the glide taken along line 11—11 of FIG. 9 shown with the adhesive disks in place;

FIG. 12 is a side elevational view of the glide taken along line 12—12 of FIG. 9 shown with the adhesive disks in place;

FIG. 13 is a top elevational view of a third embodiment of a glide constructed in accordance with the present invention;

FIG. 14a is a cross-sectional view of the glide taken along line 14a—14a of FIG. 13;

FIG. 14b is a cross-sectional view of the glide taken along line 14b—14b of FIG. 13;

FIG. 14c is a cross-sectional view of the glide taken along line 14c—14c of FIG. 13;

FIG. 14d is a cross-sectional view of the glide taken along line 14d—14d of FIG. 13;

FIG. 14e is a cross-sectional view of the glide taken along line 14e—14e of FIG. 13;

FIG. 15 is a front elevational view of the glide taken along line 15—15 of FIG. 13 shown with the adhesive disks in place; and,

FIG. 16 is a side elevational view of the glide taken along line 16—16 of FIG. 13 shown with the adhesive disks in place.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Best Modes for Carrying Out the Invention

Referring to FIG. 1 through 4 of the drawings, a conventional file cabinet, generally designated 20, is comprised of a front, back and side walls, collectively designated 21, supporting movable drawers 22. The lower ends of the walls 21 define the bottom 24 of the cabinet file 20. Attached to the bottom 24 of the walls 21 at each of the cabinet's four corners 26 are furniture floor glides, collectively designated 30. As seen in FIG. 3, the glides 30 are used to support the file cabinet 20 on a horizontal floor surface 27.

In an exemplary use, a series of four furniture glides 30 are attached respectively to the four bottom corners 26 of the file cabinet 20. The glides 30 may be attached to other items of furniture, such as tables, dressers, desks, bookcases, shelving, entertainment centers, china cabinets, appliances, electronic equipments, tool boxes and the like. Herein, the term "furniture" shall mean to include these items, but shall not be limited thereto. The utility and application of the glide to other pieces of furniture and items is similar.

The glide 30 shown in FIGS. 5 through 8 is basically a monobloc 31 triangular in shape, the monobloc having the general shape of a isosceles right triangle when viewed in horizontal cross section. The monobloc 31 has three non-colinear rounded or filleted corners 32a, 32b and 32c, collectively referred to as 32, with relatively linear periph-

eral edges 33a, 33b and 33c, collectively referred to as 33, extending between the corners 32.

For illustrative purposes, the dimensions of this exemplary monobloc 31 follow. Without rounded corners, i.e., with the peripheral straight edges 33 extended to their intersection, the monobloc 31 is formed from a piece of material in the shape of an isosceles right triangle 3.00 high, with a linear hypotenuse edge opposite the right angle corner 32a measuring 6.00 inches and two linear side edges measuring approximately 4.24 inches each. At its thickness point, the monobloc 31 is approximately 0.62 inch thick. In the embodiments shown, the corners 32 of the monobloc 31, where adjacent edges intersect, are filleted with a curve having a radius of 0.50 inch. With rounded corners the finished monobloc 31 is approximately 4.59 inches long and 2.79 inches wide. The size and configuration of the monobloc 31 may be changed as necessary or desirable for specific applications.

The monobloc 31 is integrally formed as a single piece and may be injection molded, milled or otherwise formed from thermoplastic, such as co-polyester, high-density and ultrahigh density polyethylene or polypropylene, or any other material or composite or laminate having low friction qualities and being relatively hard, yet soft and resilient to minimize the possibility of cracking or breakage.

The monobloc 31 has a bottom wall 34 defining a floor-contacting lower surface 35 and a structural web or rib 36 extending from the bottom wall 34 to its upper surface 37 distal from the bottom wall. The web 36 has segments 36a, 36b and 36c extending laterally between the respective corners 32a, 32b and 32c to define corner block segments (not numbered). The upper surface 37 of the monobloc 31 is adapted for mounting adjacent the bottom surface 24 of the cabinet 20. The upper surface 37 of the monobloc 31 will support the cabinet 20. In the case of the file cabinet 20 formed from sheet metal shown in FIGS. 1 through 4, the cabinet 20 usually has narrow bottom edges 24 formed by bending the metal sides of the cabinet inward and then optionally upward to define a horizontal rim approximately $\frac{1}{2}$ to $\frac{3}{4}$ inch wide. The glide 30 is placed on the rim aligned with the outer walls 21 in the cabinet corners 26 and secured by adhesive described hereinafter.

The monobloc web 36 defines a cavity 39 below the upper surface 37, the depth of the cavity 39 leaving the bottom wall 34 with a thickness of approximately 0.19 inch, but depending on the material and use the thickness may vary from 0.12 to 0.25 inch or more at the bottom. The cavity 39 enables the manufacturer thereof to reduce material use. However, the strength of the monobloc 31 is not unduly lessened, since the structural web segments 36a, 36b and 36c approximately 0.25 inch wide and 1.00 inch wide extend between the respective lower and upper surfaces 35 and 37 and laterally between the corners 32 to resist deformation and minimize crushing or bending of the monobloc 31 when in use.

The lower surface 35 of the monobloc 31 is arcuate over its entire extent. The floor-contacting lower surface 35 is convex downwardly away from the monobloc upper surface 37. In FIG. 5, a number of cross-sections are taken and are shown in FIGS. 6a, 6b, 6c, 6d and 6e. The lowest point on the glide 30 lies at the midpoint indicated at 40 of the altitude line extending between the right-angle corner 32a and the spanning edge 33a.

As seen in the cross-sections of FIGS. 6a, 6b, 6c and 6d, curves defining the lower surface 35 vary from a relatively small diameter arc near the corner as illustrated in FIG. 6a to a relatively large diameter arc near the center point 40 as

illustrated in FIG. 6d. By way of example, the arcs 42a and 42b in FIG. 6a both have radii of approximately 0.62 inch; the arcs 43a and 43b in FIG. 6b have radii of approximately 0.71 and 0.81 inch, respectively; the arcs 44a and 44b in FIG. 6c have radii of approximately 0.95 and 1.24 inches, respectively; the arcs 45a and 45b in FIG. 6d have radii of approximately 1.42 and 2.08 inches, respectively.

At the sides, small curves 46a, 46b and 46c having a radius of 0.25 inch extend from the large curves to the edges 33 where a draft angle of 7 degrees is maintained to facilitate removal from a mold should be monobloc 31 be formed by injection molding. The size of the small radius and the draft angle may be varied as desired. For example, draft angles between 3 and 10 degrees have been found suitable for injection molded parts.

As will be shown later, the size of the arcs may be varied as required, but should blend into one another and into the edges so that no sharp edges are presented to the floor or the carpet pile which may be present thereon. The blended arcs together define the bottom and sides of the monobloc 31 and, hence, the relatively smooth arcuate floor-contacting contacting surface 35.

The thickest part of the glide 30 lies within the center section of the monobloc at 40. The lowermost surface 35 of the bottom wall 34 is spaced away from the long peripheral edge 33a towards the right-angle corner 32a. Thus, the weight of the file cabinet 20 is positioned more closely over the floor-contacting surface portion of the lower surface 35, which in turn, minimizes the effect of the file cabinet's weight tending to tilt or bend the glide 30. Adhesive disks, collectively designated 48, shown in FIGS. 7 and 8, approximately $\frac{1}{8}$ inch in diameter and $\frac{3}{16}$ inch thick are carried within recesses, collectively designated 49, $\frac{7}{8}$ inch in diameter and $\frac{1}{16}$ inch deep defined in the upper surface 37 of the monobloc corner blocks adjacent each corner 32. Cross-linked polyethylene foam having a density of approximately 3 lb/ft³ having an adhesive coating applied to both flat sides is suitable in this application. The adhesive disks 48 may have different thickness and be made of one or more layers of any resilient type material, including plastic foam, felt or rubber or layers of such materials, coated on both sides with suitable adhesive or glue. During manufacture, the lower side of the adhesive disks 48 may be secured to the monobloc 31 with the upper side of the adhesive disk 48 covered by a removable plastic or waxed backing paper (not shown), which is peeled away from the disk 48 prior to application of the monobloc 31 to the cabinet 20. When the glide 30 is secured to the cabinet 20, the adhesive disks 48 bond the monobloc 31 to the cabinet 20. When the weight of the cabinet 20 is placed on the monobloc 31, the adhesive disks 48 are pressed into their respective recesses 49, but the weight of the cabinet 20 is supported on the upper surface 37 of the monobloc 31, not on the adhesive foam. The adhesive disks 48 though compressed secure the monobloc 31 to the cabinet bottom thereby preventing the cabinet 20 from moving off the glide 30 as the cabinet 20 is moved along the floor 27.

In use, the perpendicular edges 33b and 33c of the glide 30 are aligned with the square side corners 26 of the cabinet 20 and then pressed against the bottom 24 of the cabinet 20 with the exposed adhesive securing the glide 30 to the cabinet 20. The upper surface 37 of the glide 30 is in contact with the bottom surface 24 of the cabinet 20, the glide 30 raising the cabinet off the floor surface 27. The curved surface 35 presents a limited surface area thereby reducing sliding friction. The curved surface 35 also allows carpeting and the like to bend under the glide 30 so that the glide 30

can travel up the carpet pile rather than catching the pile to prevent travel. Since the glide 30 is formed from a low friction lubric-type material facilitating sliding between the glide 30 and the floor surface 27, the cabinet 20 can be slid easily along the floor with a minimum of effort.

The glide 50 shown in FIGS. 9 through 12 is similar to the glide 30 shown in FIGS. 5 through 8 and is basically a monobloc 51 triangular in shape, the monobloc having the general shape of a isosceles right triangle when viewed in horizontal cross section. The monobloc 51 has three non-colinear rounded or filleted corners 52a, 52b and 52c, collectively referred to as 52, with relatively linear peripheral edges 53a, 53b and 53c, collectively referred to as 53, extending between the corners 52. The dimensions are similar to those given for monobloc 31. The monobloc 51 is integrally formed as a single piece and may be injection molded, milled or otherwise formed from thermoplastic.

The monobloc 51 has a bottom wall 54 defining a floor-contacting lower surface 55 and a structural web or rib 56 extending from the bottom wall 54 to its upper surface 57 distal from the bottom wall. The web 56 has segments 56a, 56b and 56c extending laterally between the respective corners 52a, 52b and 52c to define corner block segments (not numbered). The upper surface 57 of the monobloc 51 is adapted for mounting adjacent the bottom surface 24 of the cabinet 20 which it will support.

The monobloc web 56 defines a cavity 59 below the upper surface 57, the depth of the cavity 59 leaving the bottom wall 54 with a thickness of approximately 0.19 inch, but depending on the material and use the thickness may vary from 0.12 to 0.25 or more at the bottom.

The lower surface 55 of the monobloc 51 is arcuate over its entire extent. The floor-contacting lower surface 55 is convex downwardly away from the monobloc upper surface 57. In FIG. 9, a number of cross-sections are taken and are shown in FIGS. 10a, 10b, 10c, 10d and 10e. The lowest point on the glide shown here lies at the intersection of the corner angle bisecting lines indicated at 60 extending between the respective corners 52a, 52b, and 52c and the edges 53a, 53b and 53c.

As seen in the cross-sections of FIGS. 10a, 10b, 10c and 10d, curves defining the lower surface 55 vary from a relatively small diameter arc near the corner as illustrated in FIG. 10a to a relatively large diameter arc near the center point 60 as illustrated in FIG. 10d. Here, each pair of arcs taken across the cross section are similar, since the defining arcs extend from a bisecting line. By way of example, the arcs 62a and 62b in FIG. 10a both have radii of approximately 0.61 inch; the arcs 63a and 63b in FIG. 10b both have radii of approximately 0.68 inch; the arcs 64a and 64b in FIG. 10c both have radii of approximately 1.19 inches; the arcs 65a and 65b in FIG. 10d both have radii of approximately 1.67 inches.

At the sides, small curves 66a, 66b and 66c having a radius of 0.25 inch extend from the large curves to the edges 53 where a draft angle of 7 degrees is maintained to facilitate removal from a mold should be monobloc 51 be formed by injection molding.

The thickest part of the glide lies within the center section of the monobloc at 60. The lowermost surface 55 of the bottom wall 54 is spaced away from the long peripheral edge 53a towards the right-angle corner 52a.

Adhesive disks, collectively designated 68, shown in FIGS. 11 and 12, approximately $\frac{1}{8}$ inch in diameter and $\frac{3}{16}$ inch thick are carried within recesses, collectively designated 69, $\frac{7}{8}$ inch in diameter and $\frac{1}{16}$ inch deep defined in the

upper surface 57 of the monobloc corner blocks adjacent each corner 52.

In use, the perpendicular edges 53b and 53c of the glide 50 are aligned with the square side corners of the cabinet and then pressed against the bottom of the cabinet with the exposed adhesive securing the glide to the cabinet. The upper surface 57 of the glide is in contact with the bottom surface of the cabinet, the glide raising the cabinet off the floor surface.

The glide 70 shown in FIGS. 13 through 16 is similar to the glide 30 shown in FIGS. 5 through 8 and is basically a monobloc 71 triangular in shape, the monobloc having the general shape of a isosceles right triangle when viewed in horizontal cross section. The monobloc 71 has three non-colinear rounded or filleted corners 72a, 72b and 72c, collectively referred to as 72, with relatively linear peripheral edges 73a, 73b and 73c, collectively referred to as 73, extending between the corners 72. The dimensions are similar to those given for monobloc 31. The monobloc 71 is integrally formed as a single piece and may be injection molded, milled or otherwise formed from thermoplastic.

The monobloc 71 has a bottom wall 74 defining a floor-contacting lower surface 75 and a series of interconnected structural webs or ribs 76 extending from the bottom wall 74 to its upper surface 77 distal from the bottom wall. The web 76 has segments measuring $\frac{1}{8}$ to $\frac{1}{4}$ inches wide and extending laterally between the respective corners 72a, 72b and 72c to define corner block segments (not numbered). The upper surface 77 of the monobloc 71 is adapted for mounting adjacent the bottom surface 24 of the cabinet 20 which it will support.

The monobloc webs 76 define multiple cavities 79 below the upper surface 77, the depth of the cavities 79 leaving the bottom wall 74 with a thickness of approximately 0.19 inch, but depending on the material and use the thickness may vary from 0.12 to 0.25 or more at the bottom. This embodiment is advantageous with injection molded parts since all walls and edges and surfaces are of similar thickness and weight permitting all of the elements of the monobloc to cool at similar rates to minimize unusual shrinkage problems.

The lower surface 75 of the monobloc 71 is arcuate over most of its entire extent. The floor-contacting lower surface 75 is convex downwardly away from the monobloc upper surface 77. In FIG. 13, a number of cross-sections are taken and are shown in FIGS. 14a, 14b, 14c, 14d and 14e. The lowest point on the glide shown here lies at the intersection of the corner angle bisecting lines indicated at 80 extending between the respective corners 72a, 72b, and 72c and the edges 73a, 73b and 73c. Short flat surface sections designated 81a, 81b, and 81c approximately $\frac{1}{4}$ inch wide are provided on the lower floor contacting surface 75.

As seen in the cross-sections of FIGS. 14a, 14b, 14c and 14d, curves defining the lower surface 75 vary from a relatively small diameter arc near the corner as illustrated in FIG. 14a to a relatively large diameter arc near the center point 80 as illustrated in FIG. 14d. Here, each pair of arcs taken across the cross section are similar, since the defining arcs extend from a bisecting line. By way of example, the arcs 82a and 82b in FIG. 14a both have a radius of approximately 0.61 inch; the arcs 83a and 83b in FIG. 14b both have radii of approximately 0.51 inch; the arcs 84a and 84b in FIG. 14c both have radii of approximately 0.96 inch; the arcs 85a and 85b in FIG. 14d both have radii of approximately 1.38 inches.

At the sides, small curves 86a, 86b and 86c having a radius of 0.25 inch extend from the large curves to the edges

73 where a draft angle of 7 degrees is maintained to facilitate removal from a mold should be monobloc 71 be formed by injection molding.

The thickest part of the glide lies within the center section of the monobloc at 80. The lowermost surface 75 of the bottom wall 74 is spaced away from the long peripheral edge 73a towards the right-angle corner 72a.

Adhesive disks, collectively designated 88, shown in FIGS. 15 and 16, approximately $\frac{1}{8}$ inch in diameter and $\frac{3}{16}$ inch thick are carried within recesses, collectively designated 89, $\frac{1}{8}$ inch in diameter and $\frac{1}{16}$ inch deep defined in the upper surface 77 of the monobloc corner blocks adjacent each corner 72.

In use, the perpendicular edges 73b and 73c of the glide 70 are aligned with the square side corners of the cabinet and then pressed against the bottom of the cabinet with the exposed adhesive securing the glide to the cabinet. The upper surface 77 of the glide is in contact with the bottom surface of the cabinet, the glide raising the cabinet off the floor surface.

Industrial Applicability

From the foregoing, it should be apparent that the glides described herein are simple and inexpensive and provide a convenient and effective means for readily and easily moving and locating furniture on floors.

Other aspects, objects and advantages of this invention can be obtained from a study of the drawings, the disclosure and the appended claims.

What is claimed is:

1. A glide for supporting furniture on a substantially horizontal floor surface comprising:

a monobloc having a bottom wall and at least one structural web extending from said bottom wall, said bottom wall having a floor-contacting lower surface under said web defined in part by a series of arcs blended together to define a relatively smooth convex surface;

said web extending along the periphery of the monobloc and having an upper surface at the end distal from said bottom wall adapted to support furniture thereon, said distal end defining at least one recess; and,

adhesive coated resilient material fixed within said recess, said adhesive material having an exposed upper side adapted to secure the monobloc to the bottom of furniture, whereby furniture on said monobloc rests on the upper surface thereof with the adhesive material holding the monobloc to the furniture pressed into said recess.

2. The glide of claim 1 wherein said monobloc is generally triangular in horizontal cross section, said monobloc having three noncolinear corners and linear peripheral edges extending respectively between said corners, two of said monobloc edges being perpendicular to each other, said perpendicular edges being alignable with the sides of the supported furniture, the lowest point on said monobloc lower surface being near the center of said monobloc spaced from said edges and corners.

3. The glide of claim 1 wherein said monobloc is generally triangular in horizontal cross section, said monobloc having three noncolinear corners and linear peripheral edges extending respectively between said corners, said web extending along said edges and into said corners and defining adhesive-receiving recesses adjacent each corner of said monobloc.

4. The glide of claim 3 wherein said structural web defines three peripheral segments and three corner blocks, one segment being located adjacent each peripheral edge and

extending between adjacent corner block pairs, said corner blocks defining adhesive-receiving recesses adjacent each corner of the monobloc.

5. The glide of claim 1 wherein said adhesive material has an uncompressed thickness greater than the depth of said recess, whereby said adhesive material is pressed into said recess when furniture is supported on said monobloc.

6. The glide of claim 1 wherein said lower surface of the bottom wall is defined by a series of relatively large radius arcs, said peripheral web has an outer wall defined by a series of relatively small radius arcs, said large and small arcs defining the bottom and sides of said monobloc.

7. The glide of claim 6 wherein said small radius arcs have a radius less than 0.5 inch and define a draft angle between 3 and 10 degrees with said upper surface and said large radius arcs have a radius greater than 0.5 inch.

8. The glide of claim 1 wherein said monobloc is generally triangular in horizontal cross section, said monobloc having three noncolinear corners and linear peripheral edges extending respectively between said corners, said monobloc having a series of interconnecting web segments extending between said peripheral edges and said corners and defining adhesive-receiving recesses adjacent each corner of said monobloc, said webs defining a series of cavities therebetween extending from the bottom wall and said upper surface.

9. The glide of claim 1 wherein said monobloc is at least 0.5 inch thick.

10. The glide of claim 1 wherein said monobloc has a horizontal cross section similar to a right triangle with two peripheral edges being perpendicular to one another and alignable with the sides of the furniture supported thereon.

11. The glide of claim 1 wherein said monobloc is integrally formed from a thermoplastic material.

12. The glide of claim 1 wherein said resilient adhesive material is plastic foam coated on opposite sides with adhesive.

13. A glide for supporting furniture on a substantially horizontal floor surface comprising:

a generally triangularly-shaped monobloc integrally formed from thermoplastic at least 0.5 inch thick having an upper surface adapted to support furniture thereon and a floor-contacting lower surface defined in part by a series of arcs blended together to define a smooth relatively convex surface, said monobloc having three peripheral edges with adjacent edges extending respectively between noncolinear corners;

resilient adhesive material fixed to and extending above said upper surface of said monobloc, said adhesive material having an exposed upper side adapted to secure the monobloc to the bottom of furniture, whereby furniture on said monobloc rests on the upper

surface thereof with the adhesive material holding said monobloc to the furniture.

14. The glide of claim 13 wherein two of said monobloc edges are perpendicular to each other, said perpendicular edges being alignable with the sides of the supported furniture.

15. The glide of claim 14 wherein said lower surface of the monobloc is defined by a series of relatively large radius arcs, and said edges are defined by a series of relatively small radius arcs, said large and small arcs defining the bottom and sides of said monobloc.

16. The glide of claim 13 wherein said monobloc has recesses defined adjacent each corner below said upper surface, and said resilient adhesive material is fixed in each of said recesses and extends above said upper surface of said monobloc.

17. A glide for supporting furniture on a substantially horizontal floor surface comprising:

a monobloc integrally formed from thermoplastic having an upper surface and a lower surface, said monobloc being at least 0.5 inch thick and generally triangular in horizontal cross section, said monobloc having three noncolinear filleted corners with a relatively linear peripheral edge extending between said corners, two of said edges being perpendicular to one another and being alignable with the sides of the supported furniture;

said upper surface being adapted for mounting in contact with the bottom surface of the furniture;

said monobloc including a bottom wall with said lower surface on the underside thereof, said lower surface being defined in part by a series of arcs blended together to define a relatively smooth arcuate floor-contacting surface convex away from said upper surface;

said monobloc defining at least one cavity therewithin below said upper surface, said cavity defining a series of structural webs extending between said upper and lower surfaces and laterally between said corners;

said monobloc having recesses defined adjacent each corner below said upper surface; and,

resilient adhesive means fixed within each recess and extending above said upper surface for securing the monobloc to furniture, whereby furniture rests on the upper surface of the monobloc with the adhesive means holding said monobloc to the furniture pressed into said recesses.

18. The glide of claim 17 wherein the lowest point on said monobloc lower surface is near the center of said monobloc spaced from said edges and corners.

* * * * *